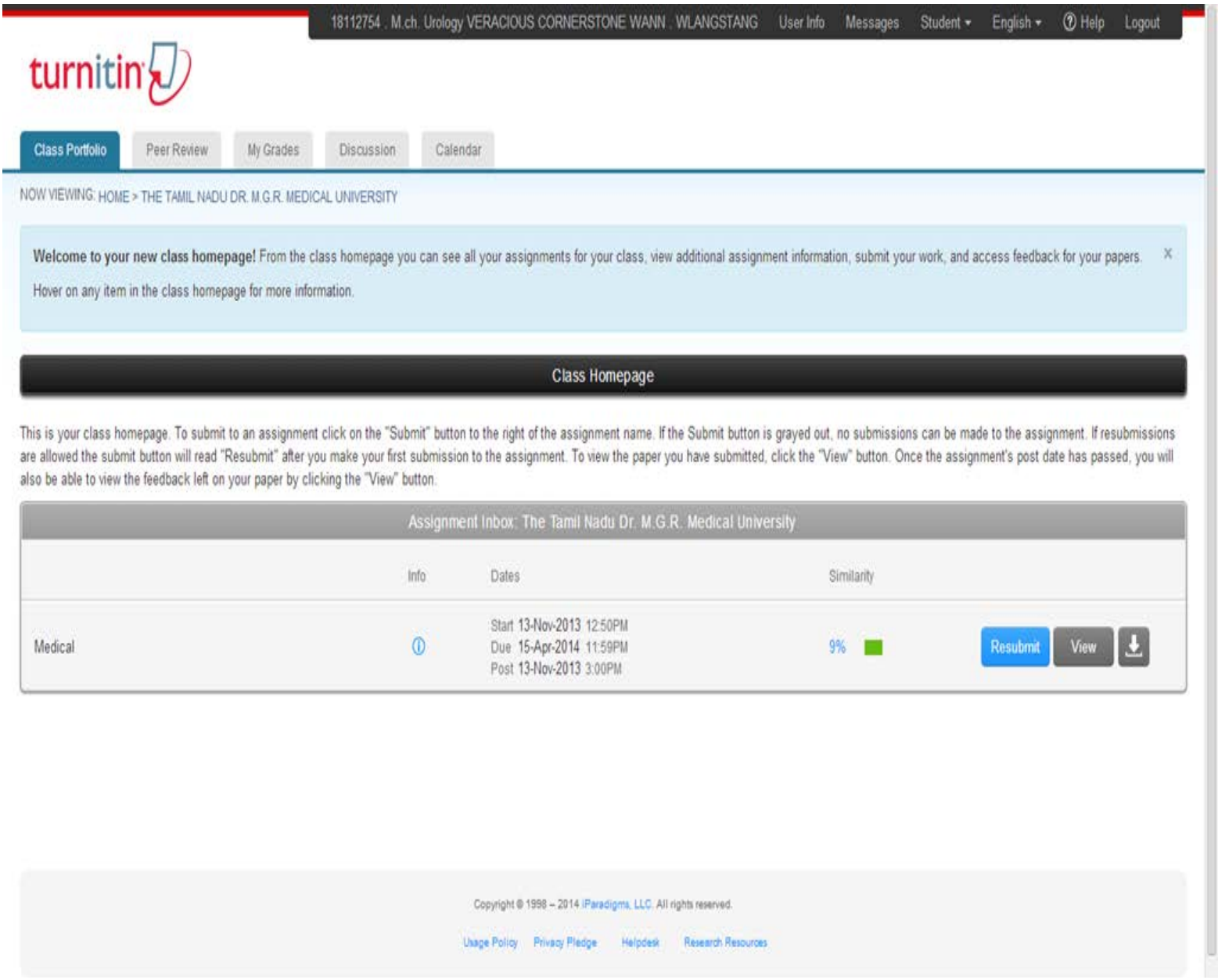
# Can TRUS estimation of the prostate volume predict the outcome of TURP in Chronic Urinary Retention?


**A dissertation submitted to The Dr. M.G.R. Medical University, Tamilnadu, in partial fulfillment of the requirements for M.Ch. Branch-IV (Genitourinary surgery) examination to be held in August 2014**

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**Can TRUS estimation of the prostate volume predict the outcome of TURP in Chronic Urinary Retention?**

is a bonafide work done by Dr. Veracious Cornerstone Wann in partial fulfillment of the rules and regulations of MCh Branch IV (Genitourinary Surgery) examination of the Tamil Nadu Dr. MGR Medical University, Chennai to be held in August 2014.

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# Can TRUS estimation of the Prostate volume predict the outcome of TURP in Chronic Urinary Retention?

## Content

# Abbreviations

**CUR- Chronic Urinary Retention**

**ICS – International Continence Society**

**PVR – Post Void Residue**

**IPP- Intravesical Prostatic Protrusion**

**TWOC- Trial void Without Catheter**

**LUTS- Lower urinary tract symptoms**

**IPSS – International Prostate Symptom Score**

**TRUS- Trans – Rectal Ultra Sonogram**

**BPE – Benign Prostate Enlargement**

**BPH – Benign Prostatic Hypertrophy**

**CISC - Clean Intermittent Self Catheterization**

**CBD – Continuous Bladder Drain (Per urethral)**

**TURP – Tranurethral Resection of Prostate**

**DRE – Digital Rectal Examination**

**BMI – Body Mass Index**

# Abstract

# Can TRUS estimation of the Prostate volume predict the outcome of TURP in Chronic Urinary Retention?

**Abstract-**

**Aim**- To study whether prostate size influences the outcome of TURP in patients with chronic retention.

**Methodology-** This was a prospective study conducted in the department of urology CMC vellore , from 1st August 2011 to 31st January 2014. All patients with chronic retention presenting to the department and planned for TURP were enrolled. Patients were evaluated by IPSS scoring, digital rectal examination, TRUS estimation of prostate volume and intravesical prostate protrusion(IPP), BMI, creatinine and urine culture . Uroflometry and post void residue (PVR) was measured for those not on catheter. The resected specimen was measured in a weighing scale and post operative PVR was measured for all patients. Patients with urethral stricture, carcinoma prostate, proven neurogenic bladder, voiding dysfunction and vesical calculus were excluded.

The primary end point was successful voiding (catheter free) with PVR of less than 150ml after the operation.

Results- We enrolled 139 patients with chronic retention in this study, 118 patients were evaluated. The mean age was 65 [65.54±8.735 (43-86)], and prostate volume was 47.23±26.75 (8.71 to 172). Patients with large prostate volume (>40ml) had higher of successful outcome following TURP (p- 0.014). There was no significant correlation of the prostate size with age (Pearson correlation coefficient 0.142), BMI (Pearson correlation coefficient -0.026) and IPSS. Patients who present with acute on chronic retention had a significantly larger prostate (51.4 Vs

34.6ml, p=0.008) and greater intravesical protrusion (7.8 Vs 6mm). Digital rectal examination correlated well with TRUS volume (Pearson correlation 0.489). Intravesical prostate more than 10mm seem to have a better outcome but it was not statistically significant (p- 0.370). Ninety – four percent had successful outcome after TURP (catheter-free), 8 patients required either CISC or indwelling catheter.

Conclusion- Majority (94%) of the patients with chronic urinary retention had successful outcome after TURP. Patients with larger prostate are more likely to be catheter-free following TURP. However, in our study we could not establish correlation between IPP and outcome following TURP.

# Introduction

## 1. Introduction

Urinary retention is a one of the most common and distressing emergency in urology. Though acute retention is more dramatic in presentation and more common, chronic retention is more obscure and may present to the outpatient clinic rather than as emergency (1). The incomplete emptying of the bladder and retention of large urine residue without the patient realizing it over a long period carries a guarded prognosis after surgery.

Urinary retention is described as the inability to empty the bladder completely or not at all. It may be classify as acute or chronic. Acute retention is a sudden painful retention which drains less than 1000ml on catheterization. The International Continence Society(ICS) defines ***Chronic retention of urine (CUR)*** as a non-painful bladder that remains palpable or percussible after the patient has passed urine(2). Such patients may be incontinent. Chronic urinary retention is defined as post void residue of more than 300ml or painless palpable bladder after voiding or more than 1000ml drained after catheterization(3). Benign prostatic hypertrophy is the most common etiology in men.

Urinary retention is a common entity in elderly men in their 70s are five times more risk of AUR than men in their 40s and the most common etiology is benign prostatic enlargement.(4,5) Acute and chronic retention are common urological emergency, but the epidemiology data available in literature is mostly for acute retention with studies performed on the various parameters influencing the outcome in terms of successful trial void without catheter (TWOC) and after transurethral resection of prostate (6). Most of the trials involving benign prostatic hyperplasia treatments (either medical or surgical) tend to exclude chronic retention patients (7,8). The exact incidence and prevalence of CUR is unknown. Since it maybe asymptomatic studies of population associated with CUR fails to determine the overall burden of

CUR. Epidemiology data in chronic urinary retention, especially in our country, are sparse and requires further studies.

CUR generally develops gradually over the period of months to years and it is often asymptomatic. Patients with CUR may present with lower urinary tract symptoms such as frequency, urgency, overflow incontinence or urinary tract infection or acute on chronic retention. Though there are various causes of CUR in men like urethral stricture, prostate cancer, cerebrovascular accidents, multiple sclerosis, Guillain – Barre syndrome, psychogenic condition etc. benign prostatic hypertrophy is the most common etiology.

Abram et al (1978) found that CUR patients with high voiding pressure had a better outcome following resection (3) but urodynamic parameters are less specific and sensitive in CUR. Besides patients with low pressure on urodynamic subsequently recover once the obstruction is relieved.

Prostate volume and intravesical prostatic protrusion (IPP) has been found to have a positive correlation with severity of LUTS, acute retention (9). IPP is useful predictor of successful TWOC (10) and medical treatment, IPP more than 10mm do not respond well to tamsulosin (11). In chronic retention however data is lacking as to whether prostate volume or intravesical prostate protrusion is associated or predict the outcome following TURP. The objective of this study is to find the correlation between prostate size and men with chronic retention.

Prostate volume by digital rectal examination is unreliable and observer dependent, the accepted imaging modality is MRI and trans-rectal ultrasound (TRUS) though MRI tends to measure approximately 10% larger than the latter. TRUS is cheaper, easily available and easy to

learn. Prostate volume is calculated using the prolate ellipsoid volume formula (single observer/investigator).

## 2. Aim

The aim of this study is to determine whether the prostate size influences the outcome of surgery in chronic retention patients.

**Primary objective-**

To find the correlation between TRUS estimated prostate volume and outcome after TURP.

**Secondary objective-**

To find the correlation between –

1. IPP and outcome after TURP
2. DRE and TRUS estimation of the prostate
3. Prostate volume and Age, BMI, IPSS and gland resected.

# 3. Review of literature

### 3.1 Definition –

Patients with chronic urinary retention (CUR) presents with long standing large residue urine. Urologist commonly classify CUR as one of the following –

Chronic (silent) or acute on chronic retention (Painful/discomfort)

High pressure or low pressure

Obstructive or non-obstructive

There is no standard numerical value for defining chronic retention. Infact the ICS has not incorporated the residual urine volume in its definition (2). However, we find numerous values used to define CUR in literature. A patient is said to have CUR if PVR > 250ml(12), 300ml(3,5,7,13–15), and acute on chronic retention if the urine drained after catheterization is more than 1000ml (16)..

### 3.2 Etiopathogenesis of CUR

#### 3.2.1 Changes in the bladder in chronic obstruction-

CUR has a complex etiopathogenesis, obstruction causing detrusor hypertrophy, overactive bladder and subsequently grossly distended bladder with poor detrusor contraction (17). Long standing obstruction causes detrusor weakness and increased distension and even when the obstruction is relieved they may not void completely. Urinary obstruction causes detrusor myohypertrophy with or without superimposed degeneration and subsequent excessive Extra Cellular Matrix (ECM) and elastic fibre deposits (hyperelastosis) between the widely separated muscle fibres which was postulated as the structural basis of chronic retention and increased bladder distensibility (18,19). Detrusor remodeling is due to degenerative and atrophic changes and elimination of smooth muscle, decrease in suburothelial myofibroblasts (20) and

compensatory hypertrophy of the remaining smooth muscle fibre, this can be diffuse or focal diffuse replacement fibrosis. This is seen in electron microscopic studies which show stereotyped patterns of the intracellular reorganization of smooth muscle cells in the detrusor of hyperactive bladder and in the prostate with benign prostatic hyperplasia, which represent both the compensatory and adaptive reactions (hypertrophied cells with minor ultrastructural changes) and the types of smooth muscle cell injury ("dark" electron-dense cells and "light" cells with pronounced lysis of myofilaments and discomplexation of organelles) (21). Bladder trabeculation is due to an increase in detrusor collagen.

### 3.2.2 Urodynamic findings-

Urodynamic studies classify CUR into high and low detrusor pressure retention. Those with high end pressure CUR have a better outcome and those with low pressure tend to fail after the obstruction is relieved (3,22). Besides being invasive, urodynamic is less specific and sensitive in identifying CUR. However there are reports of detrusor recovery and successful voiding following prostatectomy (23). Therefore even though it is not mandatory to do urodynamic in all patients with chronic retention(7) before operation those who fail to void completely after surgery will need urodynamic evaluation before the second operation to avoid incontinence (3).

### 3.2.3 Neurosensory pathway –

Parys et al (1988) did a study on the integrity of the nerve supply of the lower urinary tract in a series of 22 patients with CUR due BPH. He found that 73% of the patients demonstrated a sensory suprasacral abnormality with intact spinal reflex arcs suggesting that though the sacral reflex pathways are intact there is a sensory / proprioceptive abnormality in the

higher centre which may be an adaptive mechanism to the presence of bladder outflow obstruction. (24)

Treating this group of patients is non straight forward and outcome is not predictable due to which most clinical trials in urinary retention exclude these patients.(7)

### 3.2.4 Pathophysiology of enlargement of the median lobe of the prostate

BPH is a hyperplasia, that is, increase number of cells and not the size (hypertrophy) and this is confirmed by histological and pathological studies. The prostate volume does not correlate with the degree of obstruction or LUTS severity thus other factors play a role in causing obstruction- the dynamic sphincter and urethral resistance, prostatic capsule and the growth of the periurethral gland in the bladder neck that give rise to the “middle lobe”.

Benign prostatic hyperplasia starts in the periurethral transition zone of the prostate which is near the bladder neck (25). The transition zone consists of periurethral glands just distal to the internal or preprostatic sphincter (26). At the base of the bladder, the internal longitudinal layer of bladder muscle converges and merges with the inner longitudinal muscle of the preprostatic sphincter; these are smooth muscles that play a key role in maintaining urinary continence and prevention of retrograde ejaculation.

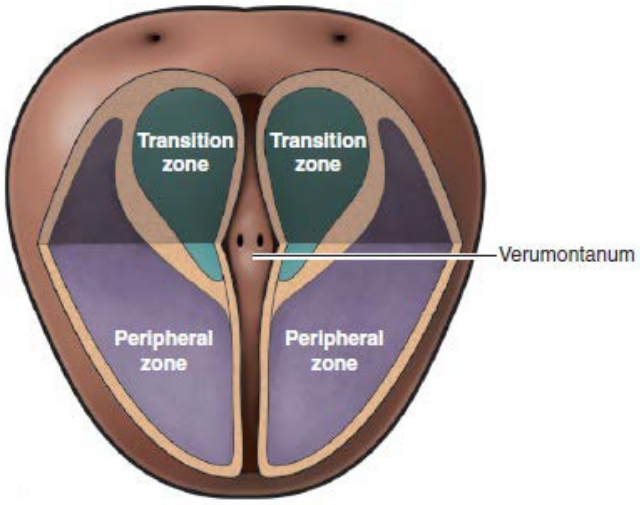



*Figure-1: Transition Zone of the prostate almost encircling the bladder neck.*

The bladder, bladder neck and the preprostatic sphincter are almost continuous and no clear demarcation either on MRI or TRUS especially when there is transitional zone hypertrophy. This hypertrophy can cause dynamic obliteration of the bladder neck presented in MRI protruding into the bladder producing a “ball-valve” mechanism of obstruction as in the figure (27,28).

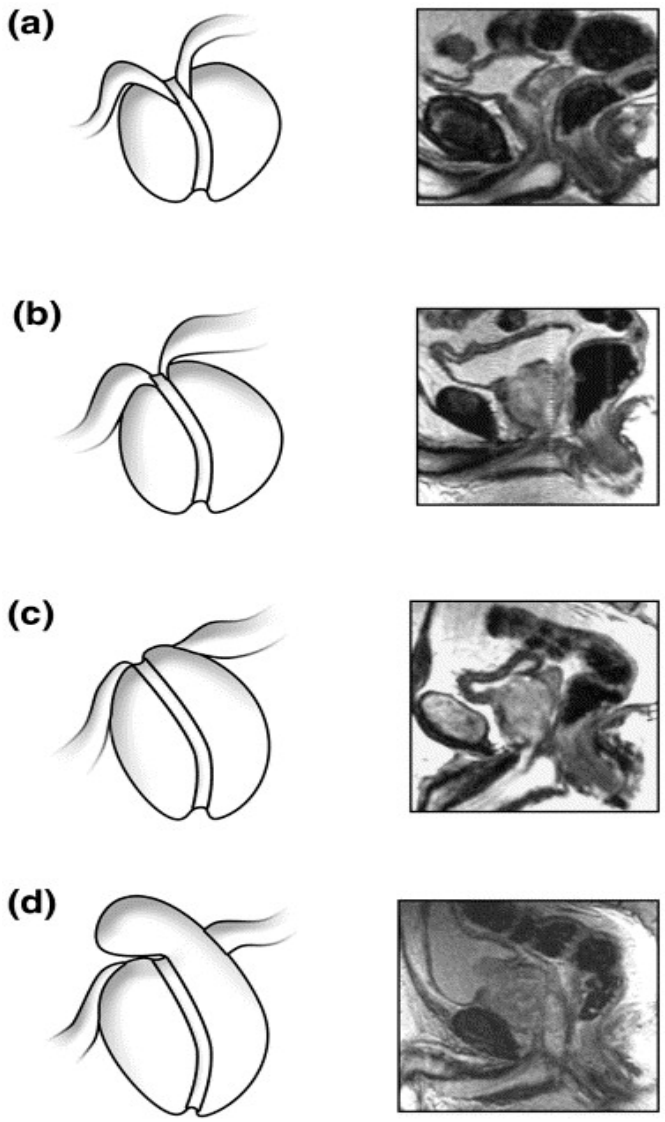



*Figure-2: Change in bladder neck anatomy with median lobe enlargement. (a) A distinct bladder neck is apparent but with progressive median lobe enlargement, the bladder neck is effaced (b, c) till it protrudes into the bladder (d) and is associated with ball valve obstruction.*

**3.3 Measuring prostate volume:**

Trans-rectal ultrasound (TRUS) is more reliable than clinical assessment. It gives better resolution images of the prostate and accurate measurement of prostate size(29,30). It is cheaper, safe, less invasive and readily available to urologist. TRUS and MRI gives similar prostate

volume though MRI is more accurate and MRI measures 10% larger than TRUS (17,31). TRUS tend to underestimate the actual surgical specimen by 10% in benign prostatic hyperplasia (32). The other parameter that can also be assessed more accurately by TRUS than transabdominal ultrasound is the **intravesical protrusion of the** (33). In acute retention patients with large (>10mm) intravesical protrusion, medical management and trial without catheter is likely to fail and is a useful predictor for treatment (11). In CUR the role of intravesical protrusion of prostate is unknown.

The use of TRUS was first reported in 1963 (34) but the development and clinical application was described by Watanabe in 1974 (35). They used 3.5 MHz transducers. Currently the state of the art TRUS are 5-8 MHz hand-held high-resolution, multi-axial planar probe with both transverse and sagittal imaging in real time with three-dimension reconstruction capabilities.

Images of TRUS

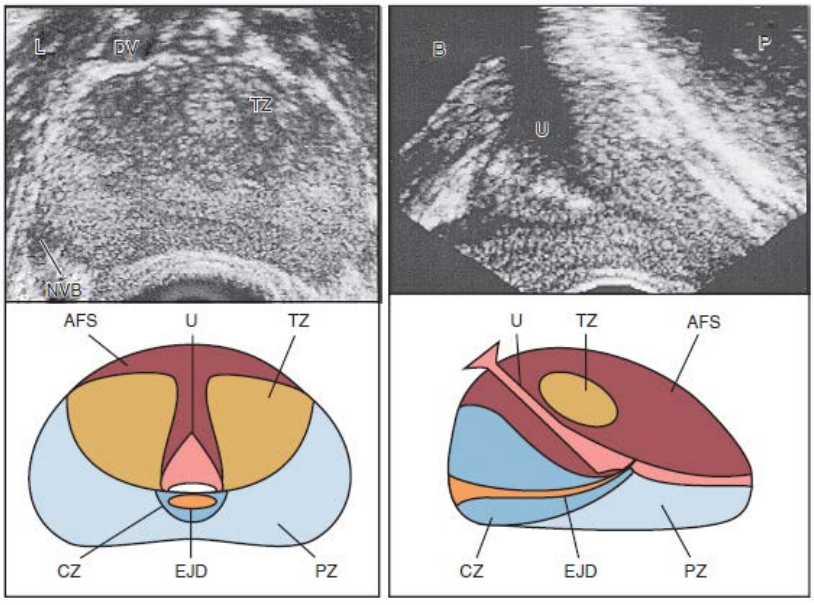



*Figure-3: Transverse section of the prostate on the ultrasound and schematic diagram* (17).

Diagnostic TRUS is an acceptable procedure and it can cause minor discomfort or not at all (36) [TRUS with prostate biopsy has more complication which will not be discussed here].

**3.4 Intravesical prostate protrusion**,

IPP can be measured by transabdominal suprapubic ultrasound or TRUS has a significant correlation with LUTS, acute retention and predictor of successful TWOC(37–39). Patients with more IPP were seem to be more obstructed regardless of the prostatic volume(33). IPP was graded into three grades-

- Grade 1 (IPP1-5mm)
- Grade 2 (IPP >5 up to 10mm)
- Grade 3 (IPP >10mm)

Grade 1 may benefit from TWOC while grade 3 would require definitive surgical procedure(39). Significant IPP is an independent factor predicting better post operative outcome in BPH in term of LUTS improvement (40).

**3.5 TRUS Vs Transabdominal**-

Transabdominal ultrasound gives a reasonably accurate size of the prostate . Transrectal ultrasound is more accurate in predicting prostate volume than transabdominal ultrasound (41); TRUS also has an advantage of detecting abnormal inflammatory or malignant lesion. Transabdominal ultrasound tends to overestimate prostate volume in 50% of patients (42). But Huang et al found no statistical differences between TRUS and transabdominal ultrasound (43). Three dimension ultrasound has no advantage over TRUS (44).

### 3.6 Detrusor thickness or intravesical prostate protrusion?

Both detrusor thickness and IPP has been shown to be non-invasive indirect evidence of urinary obstruction (33,38). But IPP seems to be a better tool in predicting bladder outflow obstruction in patients with BPE in terms of clinical and urodynamic variable with high specificity and positive predictive value (28)(2012). In patients with CUR the detrusor thickness is not a standardized variable due to gross distensibility of the bladder.

### 3.7 Obesity and BPH-

Increased BMI, metabolic syndrome and sedentary life-style is associated with increased risk of benign prostatic hyperplasia and chance or undergoing prostatectomy (17,45). There are reports which state that the association of male LUTS, prostate volume and metabolic syndrome might be coincidental and related to old age (46). But even though obesity is associated with increased prostate volume across ethnic population but not worse lower urinary tract symptoms(47). A recent systematic review showed no differences were observed between subjects with or without Metabolic Syndrome for IPSS total or LUTS sub-domain scores. Meta-regression analysis showed that differences in total prostate volume were significantly higher in older, obese patients and low serum HDL cholesterol concentrations (48).

## 3.8 Management of CUR

Management is usually complex and urgent catheterization is not necessary because it is long standing and painless. Complication like renal failure, acute retention and urinary tract infections are uncommon in these group of patients but they requires judicious follow up as

outpatient, there are no predicting factors as to who required surgery (12). The need for catheterization is when there is upper tract dilatation and renal dysfunction (16) , when they present with acute on chronic retention, urinary tract infection or the presence of vesical calculi. Earlier urologist used to decompress the bladder gradually to avoid hematuria (1,49) but systematic analysis found hematuria and hypotension are usually mild and are of little clinical consequence. One must be cautious of post obstructive diuresis especially those with fluid overload state. Initial management must consist of judicous replacement of urine output and avoid fluid overload or dehydration and maintain electrolytes; most importantly elderly and moribund patient will need supportive care (50,51).

### 3.8.1 Catheterization – CISC or Indwelling catheter?

Ghalayini et al (2005) found that clean intermittent self catheterization (CISC) did improve the outcome after TURP by allowing the low pressure bladder to recover and the upper tract dilatation to settle. Those patients with high end-void and high end filling pressure had good outcome after the surgery. The common complication of CISC in this study was bleeding or infection or both. However this study did not include the prostate volume as a study parameter. CISC may be an option for patients with CUR who are unfit for anesthesia or for surgical procedures (13).

Indwelling catheter may be an option for men unfit for surgery and who cannot do CISC however, guidelines and studies on long term use are not there (52–54). Besides the discomfort and periurethral suppurative complication, chronic indwelling urethral catheter also become coated with bacterial biofilm and struvite crystals. Therefore suprapubic catheter should be considered even in men with CUR unfit for surgery or CISC (55).

There are few reports of the use of prostatic stent in men with CUR but the outcome is unknown (56,57).

### 3.8.2 Surgical intervention -

Transurethral resection of prostate remain the treatment of choice for CUR due to BPE for those fit for operation, patients primed with preop CISC may be valuable (13,16). TURP is more effective than Laser ablation in CUR in term of symptom score, maximum urinary flow and failure (CLasP study 2000) (15) with 91% success in resection vs 63% for those with laser therapy. However with the advances in laser technology Holmium Laer Enuclation of Prostate ( HoLEP) and Photoselective Vaporization of the Prostate are also effective procedures in improving parameters in men with CUR; Jaeger et al (2014) found HoLEP had 99% catheter-free or successful outcome (14). Both the above studies did not have urodynamic evaluation before the operation. Schelin et al (2001) and Aagaard et al (2013) reported Transurethral microwave thermo therapy as a treatment option for CUR patients unfit for surgery with 77% catheter free and improvement in quality of life (58,59).

### 3.8.3 Medical intervention-

There are almost no literature for medical therapy for chronic retention in men due to BPE.

### 3.8.4 Neuromodulation –

Sacral neuromodulation is a treatment option for non obstructive chronic urinary retention with sensory impairment. Studies done on women with refractory retention and men with unexplained non obstructive CUR showed promising results but the data are small for

significant conclusion (60,61). There are no studies on neuromodulation on CUR who fail to void after TURP.

# PART - II

**PART - II**

**Aim and objective**

The aim of this study is to determine whether the prostate size influences the outcome of surgery in chronic retention patients.

**Primary objective -**

To find the correlation between TRUS estimated prostate volume and outcome after TURP.

**Secondary objective -**

To find the correlation between –

1. IPP and outcome after TURP
2. DRE and TRUS estimation of the prostate
3. Prostate volume and Age, BMI, IPSS and gland resected.

**Methodology:**

In this study we prospectively studied men with chronic urinary retention due to benign prostatic hyperplasia presenting to our institution from 1$^{st}$ August 2011 till 30$^{th}$ January 2014.

Definition- Using the ICS definition, CUR included those patients whose bladder is palpable or percussable even after voiding (2), or PVR of ≥300ml or ≥ 1000ml when in acute on chronic presentation (3)

**Inclusion criteria**- All CUR patients undergoing TURP in our institution.

**Exclusion criteria**- We excluded patients with-

- Urethral stricture,

- Carcinoma prostate,
- Proven neurogenic bladder & voiding dysfunction
- Vesical calculus.

CUR patients not fit for surgery or those who opted for CISC or indwelling catheter were not included in the treatment outcome analysis.

Patients were consented and evaluated by IPSS scoring, digital rectal examination, TRUS estimation of the prostate volume and intravesical protrusion, BMI, creatinine, uroflow-post void residue (PVR) for those not on catheter, urine cultures, gland resected during TURP and post op PVR was also recorded.

TRUS was done on Flex Focus 400 ultrasound machine (BK Medicals®, Denmark) using an 8808e Prostate Biplane transducer (BK Medicals®, Denmark) ultrasound probe with a 5 - 10 MHz frequency range and 3 – 60 mm focal range. This probe gives simultaneous sagittal and transverse real-time images (62). It can also be use for side firing TRUS guided prostate biopsy.

*Figure-4: Flex Focus 400 BK medical Ultrasound Machine and the transrectal probe*

***Figure-5: Transrectal probe.***

The Institutional Review Board of the Christian Medical College approved the protocol (IRB- No.8253) and informed consent were obtained from all patients.

**Statistical analysis –**

Descriptive statistics of the data collected were tabulated. Pearson correlation coefficient was used to describe the relation between different parameters. Data were analyzed using SPSS® 16 (SPSS, Chicago).

**Sample size**

A pilot study was done for 6 months and the actual sample size was calculated. Based on literature for acute retentions the prostate volume estimation from Djavan et al (23) (81 patients) and the pilot study we arrived at the following table-

| Single mean – Estimating the population mean | | | | | | |
|---|---|---|---|---|---|---|
| | Djavan et al* | Djavan et al* | Pilot study♠ | Pilot study♠ | Pilot study♠ | Pilot study♠ |
| Standard deviation | 17.2 | 17.2 | 31.2 | 31.2 | 31.2 | 31.2 |
| Absolute precision | 3 | 5 | 3 | 5 | 7 | 8 |
| Desired confidence level (%) | 95 | 95 | 95 | 95 | 95 | 95 |
| Required sample | 126 | 47 | 416 | 150 | 76 | 58 |
| *Bob Djavan et al Urodynamic Assessment Of Patients With Acute Urinary Retention Vol 158, 1829-1833 J Urol 1997 (23)<br>♠Pilot study | | | | | | |

The above was derived using the following formula-

## Estimating the population mean (Absolute precision)

## Assumptions

- The outcome variable is continuous.
- The sampling distribution of the sample mean is approximately normal.
- The observations are independent.

## Formula

$$n = \frac{z^2_{1-\alpha/2}\sigma^2}{d^2}$$

Where,

σ : Standard deviation

d : Precision

1- α/2 : Desired Confidence level

$n=(z^2_{1-\alpha/2}\sigma^2)/d^2$

The sample size calculated was 150 with the absolute precision of 5.

The images were stored on the ultrasound machine and transferred to the CD and the Hard disk. The image prints were filed with consent forms.

**Measuring Prostate volume**

The prostate was measure using prostate formula - π/6 x Height (AP diameter) x Width (Transverse diameter) x Length (longitudinal diameter) (17).

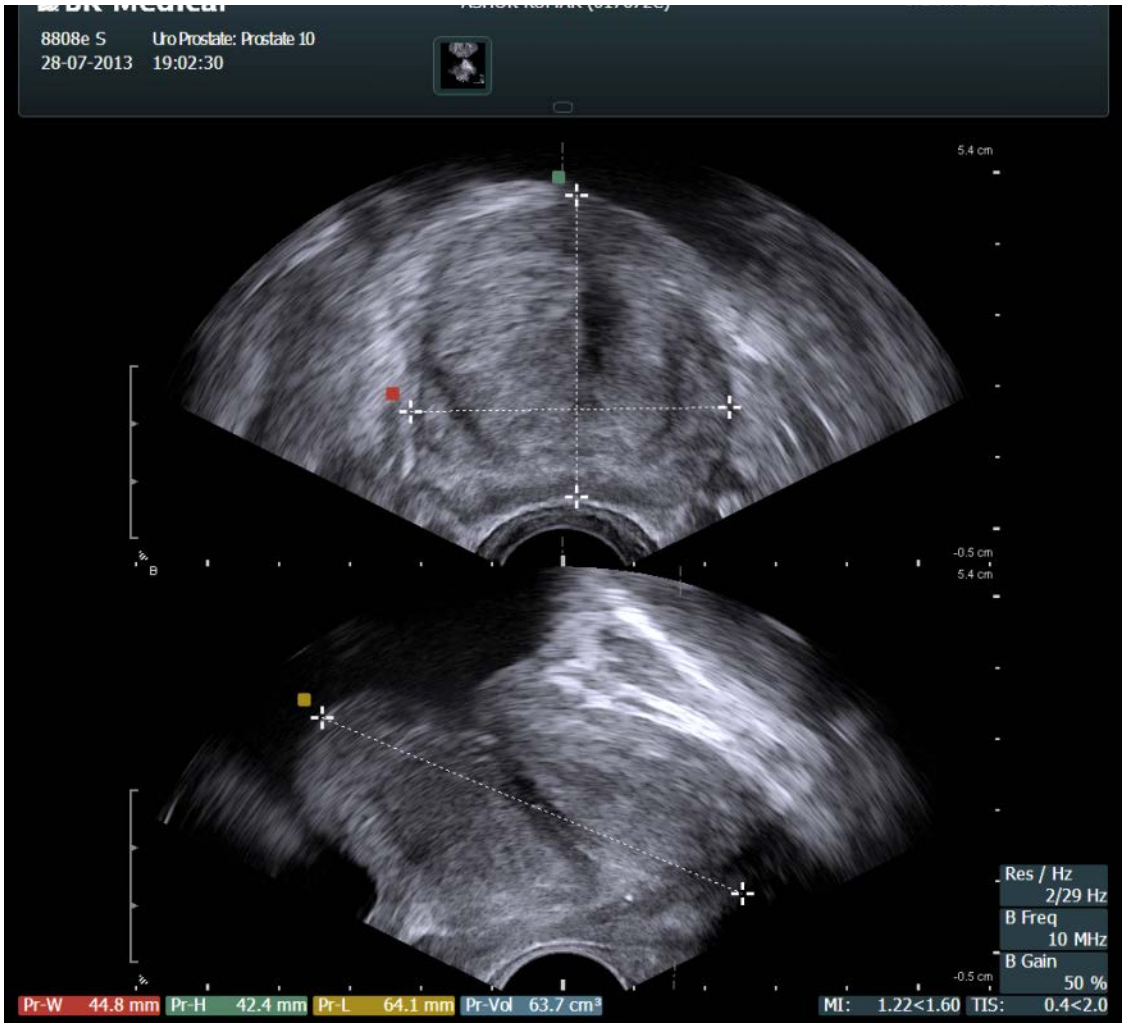



***Figure-6: Measuring prostate volume***

**Measuring Intravesical prostate protrusion IPP–**

IPP was measured from the TRUS images in the Machine itself. A line across the bladder neck is drawn and IPP is measured as a line from the tip to the intravesical prostate dropped perpendicular to the line across the bladder neck (9).IPP was graded to three groups (39) –

Grade 1 (IPP1-5mm),

Grade 2 (IPP >5 up to 10mm) and

Grade 3 (IPP >10mm).


*Figure-7: Measuring intravesical protrusion of prostate ( Dist 3 is the IPP)*

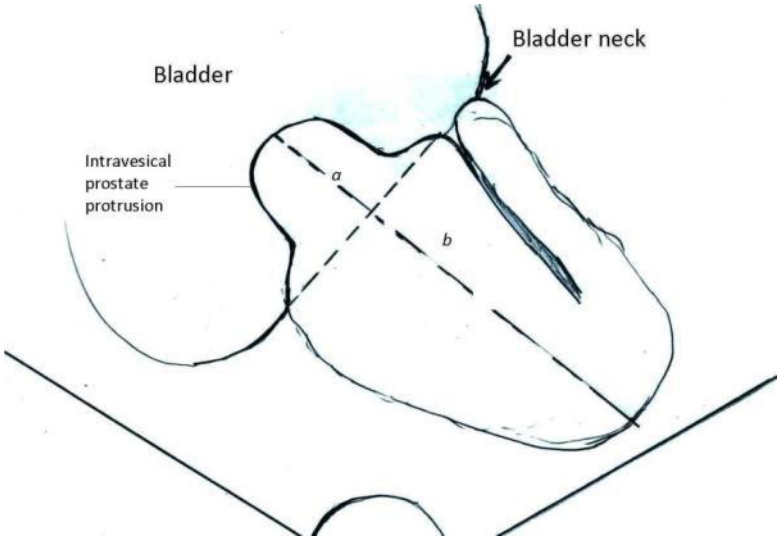



*Figure-8: Measuring intravesical protrusion by TRUS*

# Results

**Results**

There were 910 patients who underwent TURP from 1st August 2011 to 31st January 2014. A total of 139 patients were identified as chronic urinary retention, enrolled for the study and planned for TURP. Of the 139, 21 patients were later excluded and only 118 patients were included for analysis (diagram)The median age was 65 [mean 65.33±8.7 (43-86)] with a median duration of symptoms of 12 months (range 1 month to 15 years).

| **Variable** | **Median** | **Mean ± standard deviation (range)** |
|---|---|---|
| Age | 65 | 65.54±8.735 (43-86) |
| BMI | 22 | 22.139±3.9006 (14.1-38.4) |
| IPSS | 23.5 | 21.39±6.489 (3 to 34) |
| PVR (ml) | 441 | 433.96±132.6 (280-742) |
| Duration of symptoms (months) | 12 | 21.89±24 (1 month to 15 years) |
| DRE clinical (cc) | 30.0 | 31.82±11.6 (15-90) |
| TRUS prostate volume (ml) | 43.3 | 47.23±26.75 (8.71 to 172) |
| IPP (mm) | 5.9 | 7.5 ±6.5(0-20.6) |
| Gland resected (grams) | 20.0 | 22.1±16.6 (0-104) |
| Pre op creatinine (nadir) (mg%) | 1.38 | 1.5 ±0.7(0.6-5.7) |
| PSA* (pg/ml) | 7.7 | 14.5±26.5(0.43-143) |
| *PSA is not done routinely in our institute but it was done for 28 patients for insurance purposes (all had BPH). | | |

Twenty one patients excluded after consent- 3 patients had adenocarcinoma prostate, 2 patients had transitional cell carcinoma bladder, 1 had TCC of the bladder requiring radical cystectomy, 3 patients had vesical calculus, 4 patients opted later for CISC and indwelling catheter and 6 had incomplete data or loss to follow up and one patient underwent open prostatectomy.

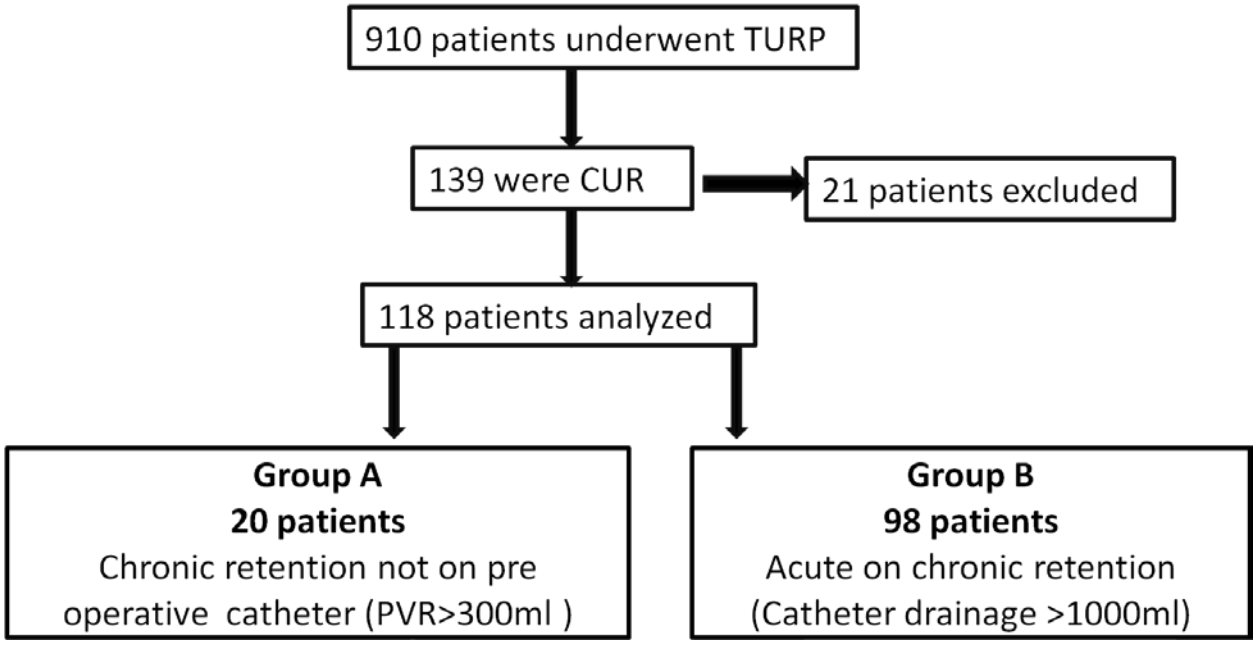



*Figure-9: Consort diagram*

**Prostate volume** –

Prostate volume Vs Age- The median size of the prostate is 43.3 ml [48.1±28.2 (8.71 to 172)] Prostate volume showed a positive correlation with age (Pearson Correlation 0.142).

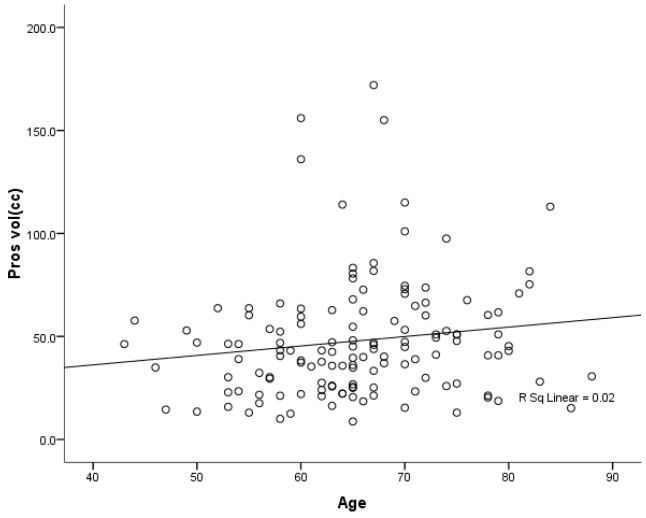
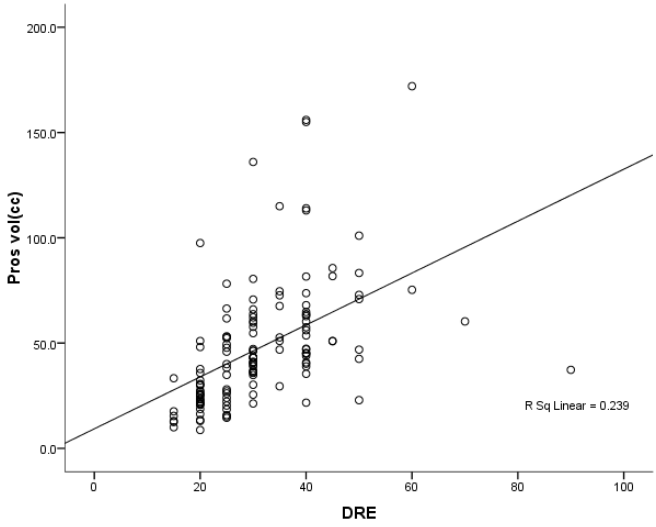



*Figure-10: Age and TRUS prostate volume in patients with chronic retention*

**Prostate volume and DRE-**

Digital rectal examination (DRE) had a significant correlation with TRUS prostate volume [Pearson Correlation 0.489].




*Figur-11: Clinical digital rectal examination estimation of prostate size comparable to TRUS*

**Prostate volume and PSA**

The larger the prostate volume, the higher is the PSA value [Pearson correlation 0.750]. All patients had benign prostatic hyperplasia on histopathology.

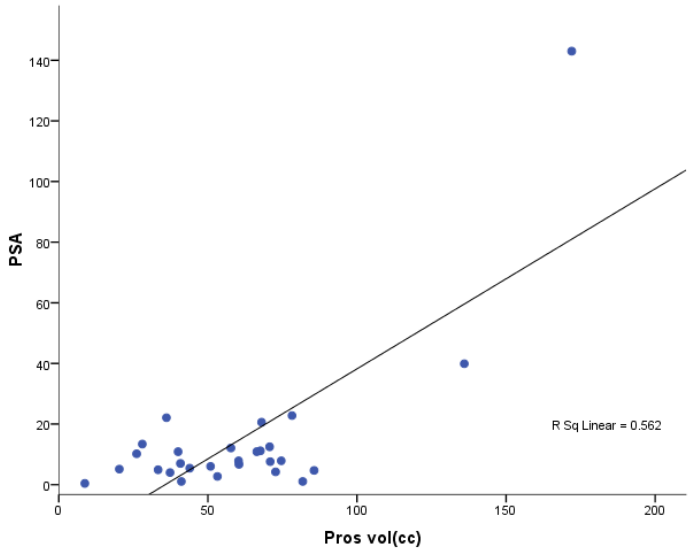



*Figure-12: Prostate volume and PSA*

**Prostate volume and glands resected.**

The weight of the TURP chips were correlating with the volume of the prostate [Pearson Correlation 0.807]

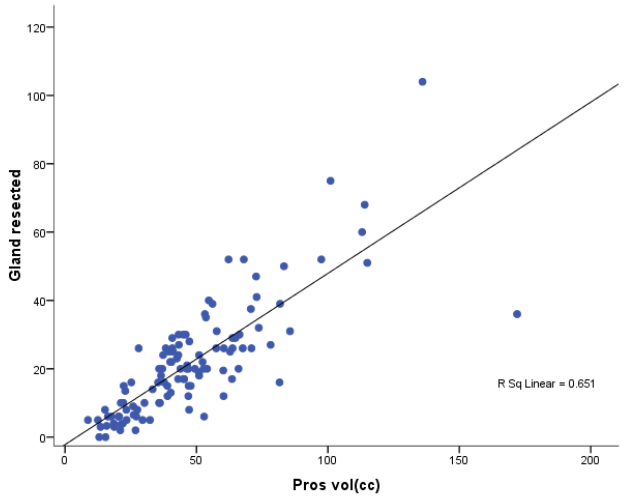



***Figure-13: Prostate volume and glands resected by TURP***

**Prostate volume and lower urinary tract symptoms**

There was no correlation between Prostate volume and severity of LUTS based on IPSS score. [Pearson correlation -0.221]

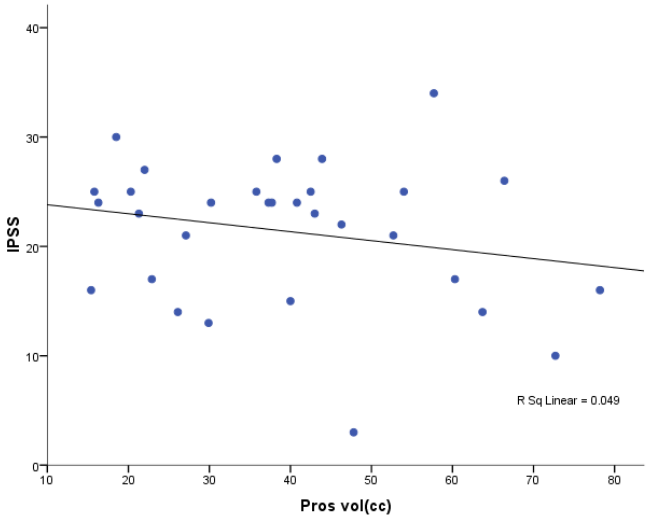



*Figure-14: Prostate volume and IPSS*

**Prostate volume Vs BMI**

Prostate volume did not correlate with BMI, [Pearson Correlation -0.026].

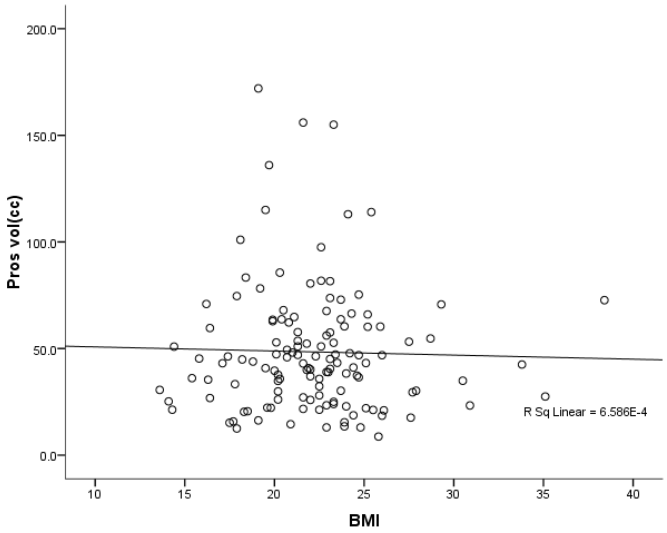



*Figure-15: Pearson Correlation diagram of BMI and Prostate volume.*

All patients were admitted 2 to 3 days earlier and were given pre operative parenteral antibiotics for at least 48 hour before they underwent TURP (Most patients were on indwelling urethral catheters and catheter changed within one week prior to TURP). Catheter was removed 2 to 5 days after the operation.

**Prostate volume and outcome** –

Patients with larger prostate (>40 ml) had better outcome (98% were catheter-free). Those with PV <20ml and those between 20 and 40ml had 82% successful outcome each.

| TRUS volume in ml (n) | Outcome successful Catheter-free | Outcome failure CISC or indwelling catheter | P (Fisher's exact test) |
|---|---|---|---|
| <20 (13) | 11 | 2(18%) | 0.014 |
| 20-40(37) | 32 | 5 (13.5%) | |
| >40 (68) | 68 | 0 | |

**Intravesical prostatic protrusion (IPP)-**

Out of 118, IPP was available for 110 patients. Patients with grade III IPP had 98% catheter-free (successful) outcome, grade II had 100% success and grade I 88%; those with larger IPP has a good chance of success after TURP in CUR. There is a positive correlation between IPP and prostate volume [Pearson correlation 0.54]

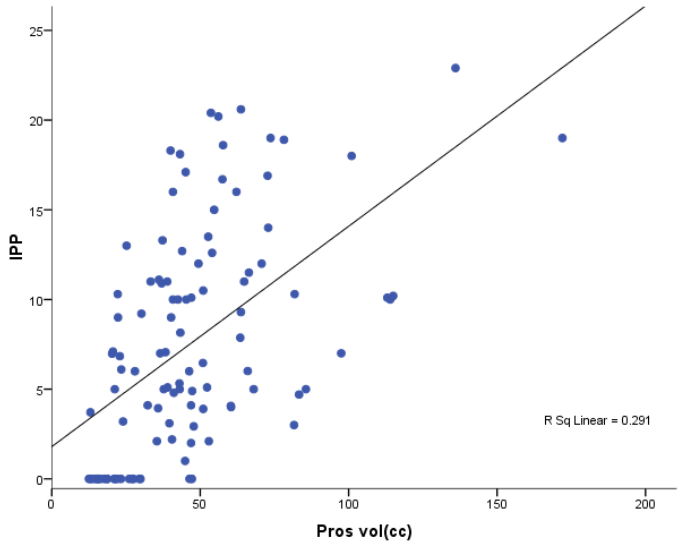



*Figure-16: Correlation between IPP and prostate volume*

**Correlations Summary**

| | | Pros vol(cc) | IPP | IPSS | Qmax | Gland resected |
|---|---|---|---|---|---|---|
| Pros vol(cc) | Pearson Correlation | 1 | .540** | -.221 | .047 | .807** |
| | Sig. (2-tailed) PVALUE | | .000 | .232 | .828 | .000 |
| | N | 118 | 107 | 31 | 24 | 113 |
| IPP | Pearson Correlation | .540** | 1 | -.004 | .324 | .590** |
| | Sig. (2-tailed) | .000 | | .984 | .131 | .000 |
| | N | 107 | 107 | 31 | 23 | 103 |
| IPSS | Pearson Correlation | -.221 | -.004 | 1 | -.047 | -.111 |
| | Sig. (2-tailed) | .232 | .984 | | .920 | .559 |
| | N | 31 | 31 | 31 | 7 | 30 |
| Qmax | Pearson Correlation | .047 | .324 | -.047 | 1 | .098 |
| | Sig. (2-tailed) | .828 | .131 | .920 | | .663 |
| | N | 24 | 23 | 7 | 24 | 22 |
| Gland resected | Pearson Correlation | .807** | .590** | -.111 | .098 | 1 |
| | Sig. (2-tailed) | .000 | .000 | .559 | .663 | |
| | N | 113 | 103 | 30 | 22 | 113 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Comparing the outcome of TURP based on IPP value**

Though there seem to be a positive correlation of IPP and the outcome of TURP but it was not statistically significant [p = 0.370].

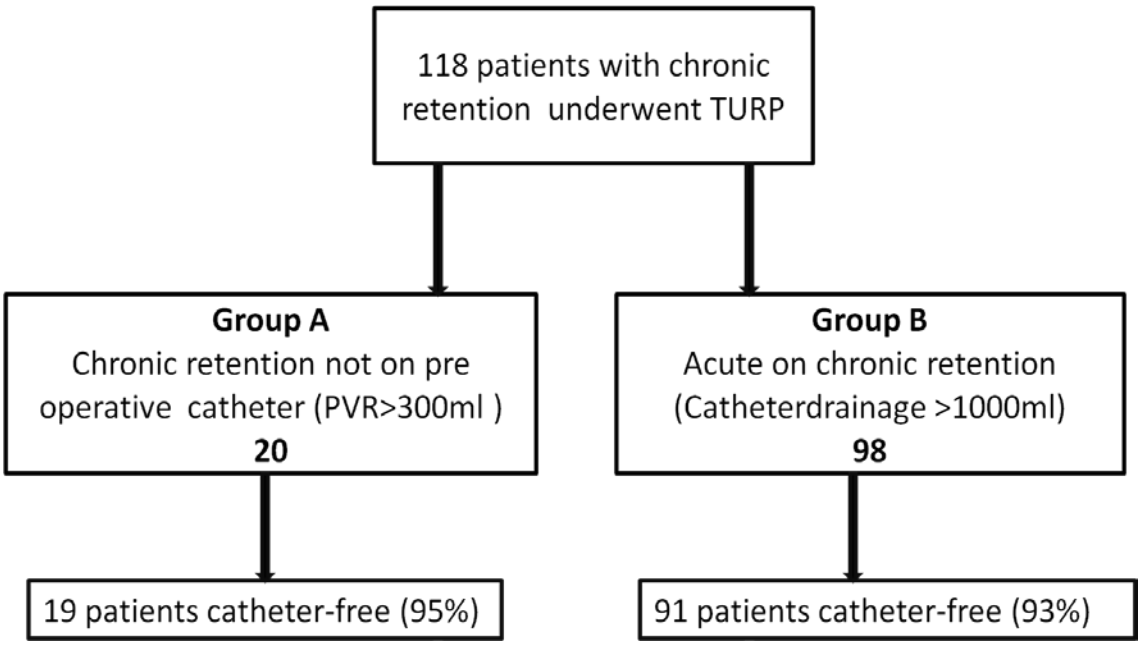
| IPP(mm) | Outcome successful (Catheter-free) | Outcome failure (CISC or indwelling catheter) | P (Fisher's Exact test ) |
|---|---|---|---|
| <5 (46) | 41 | 5 (12%) | 0.370 |
| >5 – 10 (24) | 23 | 1 (4%) | |
| >10 (37) | 36 | 1 (2.7%) | |

## Based on the presentation we CUR divided into two groups

Majority of the patients were on catheter for acute on chronic or renal dysfunction. We divided the patients in two group-

Group A – Chronic retention not on catheter (PVR ≥ 300ml)

Group B – Acute on chronic retention (PVR ≥ 1000ml)




Comparing the profile of the two groups (the mean of each group was calculated and test for difference analysis)

| | **Group A (20) Without catheter** | **Group B (98) Catheterized** | **P Sig (2-tailed)** |
|---|---|---|---|
| **Age** | 65.45 | 65.56 | 0.959 |
| **Duration of symptoms (Months)** | 21.94 | 21.88 | 0.872 |
| **IPSS** | 25 | 20.69 | 0.178 |
| **Prostate volume (cc)** | 14.39 | 27.89 | 0.013 |
| **Intravesical prostatic protrusion (IPP)** | 5.36 | 6.32 | 0.103 |
| **BMI** | 23.56 | 21.8 | 0.074 |
| **Nadir creatinine pre operatively** | 1.15 | 1.599 | 0.190 |
| **Glands resected** | 16 | 22.9 | 0.144 |
| **Post op PVR (ml)** | 143.10 | 107.49 | 0.821 |
| **Failure to void** | 1 (5%) | 7 (7%) | 0.551 |

The age and IPSS in both patient group were similar. Patients in acute on chronic retention group, requiring catheterization, had higher prostate volume, IPP and volume of gland resected statistic significance was seen onlywith prostate volume.

There was no morbidity or mortality of the study patients, 90% of patients in this study had urine culture positive but none had septicemia.

None required blood transfusion.

# Discussion

**Discussion:**

Chronic retention is an under diagnosed condition in benign prostatic hyperplasia as it is asymptomatic most of the time. It is not well define and there are no standard guidelines for the management of this condition. It is common in elderly men over the age of 50, who presents with lower urinary tract symptoms- frequency, urgency or urgency incontinence mainly due to overflow incontinence. When evaluated, they have large residue or mild lower abdominal discomfort with disproportionately large, palpable bladder. There are several factors associated with LUTS and the progression to acute retention and a positive correlation with age, prostate volume and IPP has already been established (9,38). However, because the outcome of treatment in CUR is unpredictable clinical trials in BPH tends to exclude these patients (7). To our knowledge this is a first prospective study on prostate volume and IPP in chronic urinary retention

There are only a few case control and randomized control trials on CUR though they dealt with varied etiologies of CUR, BPH was the most common. Van Vuuren et al (2011) reported in the retrospective study that patients of BPH with CUR were at least five year old than those with AUR but both had large prostate (>50cc) (63). Though our study did not include acute retention we found that prostate volume in CUR is also large 47.23±26.75cc. In fact majority of our patients with large prostate had a successful outcome after TURP.

Mariappan et al found a positive correlation of 0.59 between IPP and Prostate volume in acute retention, Lim et al and Franco et al also found a positive correlation of 0.61 and 0.45, respectively (33,38,64) in BPH. Olmsted county study found a strong correlation between IPP and prostate volume in a community based sample (9). Our study also found a

positive correlation of 0.54 even for patients with chronic retention. Like in acute retention and BPH (10), IPP seem to be a predictor for successful outcome following TURP even in CUR, though not statistically significant.

As expected the PSA value increases with the increase in prostate volume, as shown in the Olmsted study (65).

An audit by Emberton et al found that CUR comprises up to a 25% of men undergoing TURP in the UK (66). There were 910 TURP's being done during the time period of the study in our institution and CUR patients were 139 (15%). Though only 118 were analyzed 111 patients were catheter- free after TURP. The overall success or TURP is 91% in the CLasP study (15) and our study showed 94% were catheter free after TURP. Health related quality of life (HRQL) and voiding improved after a successful TURP therefore, CUR patients should be offered TURP (7,13).

There are studies based on urodynamic parameters where high end filling pressure is a good indicator of a successful outcome (3,13) but subsequent studies showed that even low end filling pressure patients do recovered after the obstruction is relieved (23). Men over 80 years old, even with unfavorable urodynamic parameter do recover subsequently (23) and they too have better HRQL following a successful resection (67). Therefore Urodynamic study is not mandatory before TURP in CUR (7).

There were very few patients in this study who did not require pre operative catheterization and had a good outcome after the surgery suggesting that not all patients with CUR and normal renal function require catheterization or CISC. But if surgery is delayed for any reason CISC is a useful option ensuring bladder recovery before the surgery (13).

This study even though prospective has several drawbacks of a single operator. Acute retentions were not studied for comparison. Detrusor thickness and pressure flow were not done. The quality of life is an important aspect which needs assessment especially in our country where men want to avoid catheter at all cost.

The definition, diagnosis and management of chronic urinary retention in men with BPH still need to be standardized and guidelines need to be established in management. We hope this study will contribute to the understanding of chronic urinary retention in men with BPH. Considering the low incidence of CUR a multicenter study will yield a better result.

# Conclusion

Majority (94%) of the patients with chronic urinary retention had successful outcome after TURP. Patients with larger prostate are more likely to be catheter-free following TURP. However, in our study we could not establish correlation between IPP and outcome following TURP.

Chronic retention patients with large prostate, longer intravesical protrusion are risk factors for acute on chronic retention but do not alter the outcome after surgery. Prostate volume does not increase significantly with age and BMI even in patient with CUR.

Digital rectal examination correlates with TRUS prostate volume estimation.

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**Annexure:**

**Consent form:**

# Informed consent for patients with chronic retention undergoing TRUS for prostate volume estimation.

**Introduction-**

We are conducting a research to study if the findings in an ultrasound scan for patients with problem similar to yours will help predicting the successful voiding. In order to do that, we need to do an additional ultrasound scan and the scanner device is introduced about an inch through the anus, to study the prostate gland. This procedure is not regularly done for patients undergoing TURP.

**Risk**

There will be no major risk or treatment complication after TRUS volume measurement. There may be minimal discomfort introducing the probe but this type of scanning is frequently done in the clinic and most patients do not have any discomfort.

**Compensation**

You will not be entitled to any compensation for participating in the study and you will not be charged for performing this procedure. In the rare event of finding any changes in the scan that may need change in your treatment plan, the findings will be utilized for your treatment.

**Confidentiality-**

Your name will be kept secret and will not be used during assessment of results and data analysis and results.

Your participation is voluntary and if there is discomfort during the procedure and does not want to participate in the study you are free to discontinue. *The treatment will continue as planned by your doctor*.

**Data to be collected**

The standard investigations before TURP reports will be collected along with the TRUS volume will be serum creatinine, blood group, urine culture, biopsy report, blood pressure, body mass index and operation records.

**Follow up**

No additional follow up is required apart from the routine follow up that is advised after this operation.

First follow up- After the operation before you go home (If you stay far from Vellore)

Second follow up- At 3 months

You may receive a phone call from the doctor doing this study.

Contact details of the investigating doctor-

……..

**Informed consent to participate in TRUS prostate volume estimation in chronic urinary retention.**

Study: Can TRUS estimation of the prostate volume predict the outcome of TURP in chronic Urinary Retention?

Study number:

Subject's initial:_____ Subject's name:_____

Date of birth/age:_____

I. I agree to participate in the TRUS prostate volume study.

II. I confirm that I have read the information sheet dated_____ and I have been explained in my language and I have consented for examination and allow the transrectal scan measurement of my prostate.

III. I understand that my participation in the study is voluntary and I am free to withdraw at anytime, without affecting my treatment.

IV. I understand that my identity will not be revealed to third party or published without my consent.

V. I agree to allow using my data for analysis and scientific studies.

Signature of the subject/study patient

_____

Date

Name

Signature of the investigator

Date

Name

Signature of the witness

Date

Name

**Study Proforma**

## Clinical Research Form
## TRUS prostate volume in acute and chronic retention undergoing TURP

Name: _____ Age:_____
Hospital No:
Address:

Phone no:
Mobile no (local):
Mobile no (Home):
Email:
Weight (Kg)- Height(cm)- BMI-
Pulse- BP(mmHg)-
Duration of symptoms(months)-

IPSS
Medications
Alpha blockers-
5α-reductase inhibitors-

Date of retention- Duration on catheter (months)-
Volume of urine after catheter insertion_____

**Comorbidities-**
Diabetes Mellitus_____ (year of diagnosis_____) Hypertension_____(year of diagnosis____)
_____ Others _____(year of diagnosis)_____

**Clinical examination**
Genitalia_____
Hernia_____
DRE Prostatic nodule BCR_____
**TRUS Prostate dimension**

| AP diameter(mm) | Transverse diameter (mm) | Longitudinal distance (mm) | Prostate volume (cc) | Intravesical prostate protrusion |
|---|---|---|---|---|
| | | | | |

*Intravesical prostate-*
*Intravesical length(mm)_____*

*Intravesical/length ratio_____*

**Pre op Uroflow if not catheterised**

Qmax(ml/s)- Voided vol(ml)- PVR(ml)-

**Pre operative investigations-**

Urine culture-

Organism-

| | | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Creatinine (mg/dl)-_____

Blood group- _____

**Operative findings**

Which lobe enlarged?

Volume resected (gm)- _____

Volume of glycine used (litres)- _____

Volume of saline used (litres)- _____

Blood transfused

**Biopsy**

**Complications-**

**Post operative investigations**

urine culture

Creatinine

**Follow up at one week**

Symptoms IPSS

Uroflow Qmax Voided vol PVR

**Follow up at three months**

Symptoms IPSS

Uroflow Qmax Voided vol PVR

Contact details of the investigating doctor-

……..

| Date of stu | Name | Hospital numb | Age | Unit | DM | HTN | other com | duration o | IPSS | Alpha bloc | 5α reducta | date of cat | Immediate | Date of Sx | Qmax | Voided Vol | PVR | TWOC | height(cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08.10.12 | Velu | 257653F | 65 | | No | No | | 2 | | | | Jul-12 | 1000 | 11.10.12 | | | 400 | Failed 1 | 167 |
| 15.09.11 | Asoke Mukherjee | 000741F | 59 | | No | 2011 | | 12 | | | | 25.7.11 | 1000 | | | | 742 | | 155 |
| 19.05.12 | Krishna Pada Mondal | 161779F | 75 | | No | No | | 12 | | NA | NA | Not catheti | CUR | 21.05.12 | 0.5 | | 556 | | 162 |
| 27.6.13 | Bikash Kanti Saha | 499746F | 55 | | No | Yes | Nil | 1 | | | | | CUR | 27.6.13 | 6.9 | 507 | 320 | | 158 |
| 27.6.13 | Vasu Deva Rao | 489402F | 50 | | No | Yes | CKD | 8 | | Yes | No | 24.3.13 | 1000 | 26.6.13 | | | | | 165 |
| 19.08.12 | Yogendra Prasad Sinha | 255534F | 47 | | No | No | Chew toba | 48 | | | | 24.07.12 | 1000 | 20.08.12 | | | >300 | | 171 |
| 28.07.12 | Ekambaram | 227642F | 86 | | No | Yes | | 60 | | | | 23.06.12 | 1000 | 26.07.12 | | | | failed 1 | 162 |
| 10.7.13 | Harikrishnan M | 546337C | 70 | | Yes | Yes | | | 16 | | | 1.13 | 1000 | 11.7.13 | | | | once failed | 165 |
| 23.6.13 | Swapan Modak | 499233F | 53 | | No | No | | 1 | 25 | No | No | 14.6.13 | 1000 | 24.6.13 | | | 527 | None | 156 |
| 26.7.13 | Devanandan Prasad Sal | 330256C | 63 | Uro1 | No | Yes | asthma | 60 | 24 | Yes | Yes | Not catheti | CUR | 26.7.13 | 3.7 | 98 | 387 | None | 162 |
| 11.09.12 | Sathya Prasad | 242431F | 56 | | no | no | | 72 | | Yes | Yes | Not catheti | CUR | 13.09.12 | 5 | 150 | 634 | | 168 |
| 02.12.12 | Budu Ram Shaw | 329091F | 66 | | Yes | Yes | | 2 | 30 | Yes | | | CUR | 3.12.12 | 3.8 | 75 | 558 | NA | 170 |
| 13.09.11 | Annamalai | 033903B | 79 | | Yes | Yes | | 3 | | | | 02.06.11 | 1000 | 03.09.11 | | | | | 158 |
| 23.06.13 | Govindaraji C | 668279D | 78 | Uro1 | No | No | Smoker | 24 | 25 | No | No | 7.4.13 | 1000 | 26.6.13 | | | | | 162 |
| 08.05.12 | Kannu Samy K | 144644F | 65 | | No | No | | 48 | | No | No | May-12 | 1000 | | | | | Failed 2 | 161 |
| 31.07.11 | Gilbert | 144078(Old) | 62 | | No | No | | 10 days | | | | 18.07.11 | 1000 | | NA | NA | NA | 1 | 165 |
| 17.01.12 | Ram Sakal Ram | 897109C | 58 | | No | Yes | | 12 | | | | | 1000 | | 14 | | | | 162 |
| 16.9.13 | Dulal Chandra Sahu | 645454F | 67 | Uro1 | No | No | Smoker | 24 | 23 | No | No | 14.6.13 | 1000 | 17.9.13 | | | | None | 161 |
| 10.7.13 | Laxmi Prasad Ramtel | 858472D | 60 | | Yes | Yes | Nil | 120 | 27 | Yes | No | 9.4.13 | 1000 | 15.7.13 | | | | once failed | 167 |
| 08.01.13 | Sanatan Chakraborty | 382121F | 64 | | No | No | Nil | | | | | | CUR | 14.1.13 | 7.7 | 125 | 318 | | 165 |
| 30.05.12 | Bijay Singh | 191222F | 64 | | Yes | Yes | CRF | 12 | | | | 11-Dec | 1000 | 31.5.12 | | | | | 155 |
| 15.7.13 | Gobinda Chandra Das | 430618F | 53 | | No | No | Nil | 12 | 17 | No | No | 16.3.13 | 1000 | 15.7.13 | 3.8 | 144 | 300 | None | 150 |
| 15.01.12 | Joseph R. Raju | 105739B | 71 | | Yes | Yes | Smoker | | | | | 30.12.11 | 1000 | 16.01.12 | | | | | 163 |
| 04.08.11 | Jahar Das | 932939D | 54 | Uro1 | No | 6 years | COPD | 6 | | | | | 1000 | 05.08.11 | | | | | 162 |
| 22.01.12 | Paramasivam A C | 791659D | 62 | | No | 2years | IHD | 24 | | No | | Not catheti | CUR | 30.01.12 | 4.3 | 141 | 300 | NA | 159 |
| 24.10.11 | Meganathan K. | 013081F | 67 | | No | No | | 48 | | | | 29.08.11 | 1000 | | | | | Not done | 164 |
| 08.10.12 | Prahlad Prasad | 951269C | 74 | Uro1 | No | No | Chew tobacco | | | | | 29.09.12 | 1000 | 09.10.12 | | | | Not done | 165 |
| 15.7.13 | Munirathinam | 476366F | 63 | | No | No | Nil | 1 | 14 | No | No | 3.6.13 | 1000 | 15.7.13 | | | | | 165 |
| 03.10.12 | Pratap Singh | 274686F | 65 | | Yes | Yes | Psychiatry | 5 | | | | 18.09.12 | 1000 | 04.10.12 | | | | | 164 |
| 22.01.12 | Shafi Ahmed | 084078F | 75 | | No | No | | 6 | 21 | No | No | Not catheti | CUR | 23.1.12 | 0.5 | 90 | 300 | | 158 |
| 05.09.11 | Haripandurangan K | 789823C | 62 | | 2year | No | | 12 | | | | 05.08.2011 | 1000 | | | | | failed 1 | 168 |
| 17.09.12 | Ramalingam K | 254425F | 83 | Uro1 | | | | | | | | 20.08.12 | 1200 | 17.09.12 | | | | | 155 |
| 05.06.12 | Anandan S P | 186450F | 57 | | No | No | | | | | | 22.04.12 | 1000 | 5.06.12 | Not recordable | | >600 | Failed 3 | 159 |
| 20.8.13 | Syed Hazrat Basha | 646772F | 72 | | No | No | Nil | | 13 | No | No | 16.8.13 | 1000 | Not operated | | | | | 171 |
| 23.6.13 | Sunil Kumar Dutta | 011239F | 53 | | No | Yes | Nil | 120 | 24 | Yes | No | 30.4.13 | 1000 | 24.6.13 | | | | | 159 |
| 23.04.12 | Suriyakanta Mondal | 109727F | 56 | | No | No | Smoker | 60 | | | | 28.12.11 | 1500 | 25.04.12 | | | | | 174 |
| 24.09.12 | Ramjag Ram | 294239F | 67 | Uro1 | | | | 8 | | Yes | | Not catheti | CUR | 24.9.12 | 0.5 | 256 | 385 | | 159 |
| 05.03.12 | Kanai Giri | 101023F | 61 | Uro1 | No | No | Smoker | 96 | | | | 24.12.11 | 1000 | 7.03.12 | | | | | 168 |
| 26.03.12 | Nageshwar Sharma | 156682F | 64 | Uro1 | No | No | | 6 | | | | 11-Mar | 1000 | 27.03.12 | | | | | 155 |
| 29.5.13 | Madan moham Das | 432645F | 63 | | yes | no | | 24 | 25 | No | No | Not catheti | CUR | 30.5.13 | 4.9 | 257 | 444 | | 169 |
| 21.8.13 | Balaraman A | 629007F | 65 | | No | No | Smoker | 2 | | No | No | 12.7.13 | 1000 | 22.8.13 | | | | None | 165 |
| 08.09.11 | Bharat Kundu | 995641D | 70 | | No | No | | | | | | 6.11 | 1000 | 08.09.11 | | | | | 156 |
| 03.10.12 | Anil Swarnakar | 284542F | 68 | | No | No | | 8 | | | 5 | No | 08.07.12 | 1000 | 04.10.12 | | | | | 165 |
| 27.8.13 | Panchatcharam | 288540old | 60 | | No | No | | 12 | 24 | No | No | 6.7.13 | 1000 | | | | | No | 165 |
| 30.05.12 | Sukumar Talukdar | 188913F | 62 | | 2002 | 2002 | Smoker | 3 | 24 | | | 15.05.12 | 1000 | | | | | | 165 |
| 10.7.13 | Ameer Jan S. | 605042F | 60 | | No | Yes | | 24 | 28 | No | No | 21.5.13 | 1000 | 12.8.13 | | | | None | 158 |
| 14.03.12 | Ranga Reddy | 120230B | 71 | | Yes | Yes | IHD | 24 | | | 24 | Not catheti | CUR | 29.03.12 | 10.2 | 150 | 518 | | 173 |
| 02.08.11 | Mani C | 976804A | 54 | | No | 2months | | 2 | | | | Not catheti | CUR | 3.8.11 | 5.9 | 131 | 380 | | 155 |
| 21.08.11 | Provat Dey | 004664F | 65 | | No | No | | 24 | | No | No | 12.8.2011 | 1000 | | | | | no | 150 |
| 15.7.13 | Chidambaram M G | 613948F | 66 | Uro1 | Yes | Yes | Nil | 6 | 15 | | | 28.6.13 | 1300 | 16.7.13 | | | | None | 170 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03.09.12 | Logu K S | 471751B | 68 | Uro1 | No | No | | | 12 | | | | | 12-Jun | | 1000 | | | | | | failed 1 | | 165 |
| 01.08.12 | Hari Pada Kayet | 242678F | 58 | | No | No | | | | | | | | Jun-11 | | 1000 | 01.08.12 | | 6.9 | | 205 | 494 | | | 164 |
| 7.8.13 | Meshak D | 229521F | 78 | | No | No | | | 1 | 24 | No | | No | 1.12.12 | | 1000 | 12.8.13 | | | | | None | | | 160 |
| 21.08.11 | Sukhalal Saha | 996911D | 79 | | No | Yes | IHD | | 36 | | | 12 | 12 | CUR | CUR | | 22.08.11 | | 7.5 | | 152 | 300 | | | 160 |
| 21.8.13 | Ram Gati Singh | 416655F | 73 | | No | Yes | | | | | | | | | CUR | | 22.8.13 | | 9.3 | | 315 | 280 | | | 167 |
| 15.05.12 | Naresh Prasad | 146266F | 63 | | Yes | No | GUTB | | 4 | 25 | NA | | NA | Not catheti | CUR | | 17.05.12 | | 9.9 | | 145 | 300 | | | 165 |
| 6.8.13 | Ramdeni Saw | 636399F | 80 | | No | Yes | CVA | | 1 | 23 | No | | No | 12.7.13 | | 2000 | 12.8.13 | | | | | None | | | 158 |
| 25.09.12 | Sharalamsekh | 294398F | 59 | | No | No | Smoker | | 4 | | | | | Sep-12 | | 1500 | 05.11.12 | | | | | | | | 162 |
| 19.08.11 | Dhamodiran | 987675D | 62 | | No | 1 year | | | 4 | | | 4 | 4 | CUR | CUR | | 19.08.11 | NA | | | | 300 | | | 162 |
| 26.09.12 | Mani Sundharam | 289097F | 58 | Uro1 | No | Yes | | | 24 | | Yes | | Yes | 17.08.12 | | 1200 | 28.09.12 | | | | | failed 3 | | | 170 |
| 16.8.13 | Baneshwar Barai | 622855F | 67 | | No | Yes | | | | 28 | No | | No | 2.7.13 | | 1000 | 16.8.13 | | | | | None | | | 158 |
| 02.08.11 | Govindaraj | 975590D | 70 | | No | No | | | 4 | | NA | | NA | 15.07.11 | | 1000 | | NA | NA | | NA | no | | | 159 |
| 16.4.13 | Kasinathan M | 558476C | 65 | Uro1 | yes | No | | | | | | | | 1.4.13 | | 1500 | 17.4.13 | | | | | None | | | 165 |
| 08.08.11 | Rajakili | 917075D | 80 | | No | No | Asthma | | 24 | | yes | | | | | 1000 | 10.08.11 | NA | | | | | 1 | | 157 |
| 20.07.11 | Akinchan Ghosh | 979145D | 67 | | No | No | | | 24 | | | | | 17.06.11 | | 1000 | 21.07.11 | | | | | no | | | 163 |
| 03.01.12 | Yogendra Prasad | 075050F | 43 | | No | No | | | 24 | 22 | | | | 01-Jun | | 1500 | 4.01.12 | NA | NA | | NA | Not done | | | 161 |
| 11.02.13 | John Ravindran J | 566269D | 53 | Uro1 | No | Yes | | | | | | | | | CUR | | 12.02.13 | | 0.5 | | | 600 | | | 181 |
| 26.09.11 | Ashutosh Bihari Sahay | 017726F | 58 | Uro1 | No | | 2011 | | 8 | | | | | 30.6.11 | | 2000 | 27.09.11 | NA | NA | | NA | Not done | | | 167 |
| 17.08.11 | Chinna Durai K Dr | 888314D | 67 | | 17 years | 12 years | IHD | | 36 | | | | | | CUR | | 02.09.11 | | 4 | | 7 | 300 | | | 157 |
| 23.02.12 | Rajagopal G | 106707F | 50 | | No | No | fracture tibia | | | | | | | 10.01.12 | | 1000 | | | | | | failed 3 | | | 165 |
| 15.10.12 | Karmbeer Parsad Gupt | 249989F | 63 | Uro1 | Yes | Yes | Dyslipidemia | | | | | | | 14.09.12 | | 2000 | 17.10.12 | | | | | | | | 160 |
| 19.12.11 | Kanailal Paik | 085758F | 70 | Uro1 | No | No | | | 24 | | | 1 | | 2009 | | 1000 | 20.12.11 | | | | | | | | 164 |
| 16.9.13 | Muniswamy R | 057598B | 75 | Uro1 | Yes | Yes | | | 1 | 3 | No | | No | 29.7.13 | | 1400 | 17.9.13 | | | | | None | | | 169 |
| 28.07.12 | Niranjan Mondal | 239277F | 73 | | Yes | No | | | 12 | | | | | 19.6.12 | | 1200 | | | | | | | | | 176 |
| 20.11.12 | Ramaswamy P | 299491F | 75 | | No | No | | | | | | | | 18.09.13 | | 1000 | 22.11.12 | | | | | Not done | | | 158 |
| 17.08.11 | Ramji Sahay | 979735D | 73 | Uro1 | No | No | Pulmonary | | 24 | | | 18 | 18 | 23.06.11 | | 1000 | 19.08.11 | | | | | | | | 168 |
| 26.09.12 | Lakshmikanthan K S | 746454B | 79 | | No | No | IHD post CABG | | | | | | | Apr-12 | | 1000 | | | | | | | | | 156 |
| 05.08.12 | Ramesh Jha | 256223F | 58 | | yes | no | | | 24 | | | | | 14.07.12 | | 1000 | 06.08.12 | | | | | Failed 1 | | | 170 |
| 2.8.13 | Ponnusamy C | 575780D | 74 | | Yes | No | Nil | | 48 | 21 | Yes | | Yes | 8.7.13 | | 1200 | 2.8.13 | | | | | Failed 1 | | | 155 |
| 13.09.11 | Zaffarullah Khan | 975415D | 49 | | Yes | No | Dyslipidemia | | | | | | | 12.07.11 | | 1000 | 09.09.11 | | | | | | | | 164 |
| 23.10.12 | Mongal Banerjee | 288159F | 70 | | | | | | | | | | | | CUR | | 24.10.12 | | 7.5 | | 162 | 439 | | | 165 |
| 13.03.13 | Dibakar Pradhan | 426184F | 57 | | No | No | Smoker | | | | | | | 9.2.13 | | 1000 | 14.3.13 | | | | | | | | 165 |
| 12.9.13 | Mohammed Naimuddi | 642026F | 70 | Uro1 | No | No | | | 36 | 25 | No | | No | 28.8.13 | | 1000 | 13.9.13 | | | | | None | | | 160 |
| 10.09.12 | Abdul Satter | 251312F | 65 | Uro1 | yes | no | Smoker | | 9 | | | | | 19.6.12 | | 1000 | 14.09.12 | | | | | failed 1 | | | 172 |
| 27.08.12 | Prabhu Sharan Singh | 059612F | 60 | | No | Yes | Smoker | | 12 | | Yes | | Yes | 14.06.12 | | 1000 | 28.08.12 | NA | NA | | NA | Not done | | | 171 |
| 16.7.13 | Thamarai A | 460948D | 69 | Uro1 | No | Yes | | | 36 | | | | | 28.5.13 | | 1000 | 18.7.13 | | | | | | | | 150 |
| 4.8.13 | Bijoy Mochary | 624013F | 44 | | Yes | Yes | | | 180 | 34 | | | | 23.12.12 | | 1000 | | | | | | None | | | 168 |
| 26.03.12 | Govindharaj | 099009F | 72 | | No | Yes | Hep B and | | 48 | | | | | 11-Nov | | 1000 | | | | | | failed1 | | | 157 |
| 27.8.13 | Perumal V | 639522F | 55 | | No | No | | | 1 | 17 | No | | No | 7.8.13 | | 1000 | | | | | | 1 Failed | | | 169 |
| 05.06.12 | Radhakrishnan | 147448F | 78 | | No | No | Hernia | | 3 | | Yes | | | 2.04.12 | | 1000 | 6.06.12 | | | | | Failed 1 | | | 171 |
| 06.06.12 | Ismail S | 101213F | 66 | | Yes | Yes | | NA | | | | | | 15.12.12 | | 1000 | | | | | | failed 3 | | | 164 |
| 10.12 | Asim Kumar Ukil | 317152F | 63 | Uro1 | No | No | asthma | | 6 | | | | | 11.10.12 | | 1000 | 9.11.12 | | | | | 418 | | | 175 |
| 05.11.12 | Harka Maan Tamang | 313408F | 60 | Uro1 | Yes | No | | Nil | | | | | | 13.09.12 | | 1500 | 16.11.12 | | | | | Failed 2 | | | 160 |
| 10.09.12 | George | 667305old | 55 | Uro1 | no | no | asthma | | 3 | | | | | 16.06.12 | | 1000 | | | | | | failed 2 | | | 170 |
| 28.7.13 | Ashok Kumar | 017672C | 52 | | No | Yes | Nil | | | 14 | No | | No | 24.4.13 | | 1000 | 29.7.13 | | 7.2 | | 93 | 708 | 1 | | 178 |
| 11.01.12 | Samirendra Nath Chak | 081150F | 71 | | No | yes | | | 36 | | | 12 | 3 | Not catheti | CUR | | 16.2.12 | | 0.5 | | | 454 | NA | | 170 |
| 25.07.11 | Dhanivel | 962656D | 58 | | No | 2 year | | | 2 | | | | | 22.05.11 | | 1000 | 28.07.11 | | | | | | 1 | | 168 |
| 20.12.11 | Naser Ali Mondal | 086806F | 72 | | No | No | | | 6 | 26 | | 3 | | Oct-11 | | 1200 | 21.12.11 | | | | | failed 2 | | | 157 |
| 28.11.12 | Abraham Savari Muthu | 384113D | 76 | | No | Yes | IHD | | 18 | | | | | 8.11.12 | | 1800 | 29.11.12 | | | | | | | | 152 |
| 20.12.11 | Narayan Nishad | 093050F | 65 | | No | | 2 | | 24 | | | | | 30.10.11 | | 1000 | 22.12.11 | NA | NA | | NA | | | | 156 |
| 17.09.12 | Ganesan A | 726830C | 70 | | Yes | Yes | Left BKA | | 24 | | | | | 15.06.12 | | 1500 | 12.10.12 | | | | | Failed 2 | | | 160 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.11.12 | Ilaiah | 291607F | 81 | Uro1 | No | No | | 12 | | No | No | | 1000 | 14.11.12 | | | | Not done | 161 |
| 16.7.13 | Yousuf Hussain D | 616108F | 66 | | Yes | Yes | Obesity | 1 | 10 | Yes | Yes | 18.6.13 | 1000 | 17.7.13 | | | | once failed | 153 |
| 14.03.12 | Naba Kumar Mandal | 143565F | 70 | | No | Yes | | 36 | | | | 12-Jan | 1500 | 17.03.12 | | | | | 167 |
| 11.01.12 | Paulswamy | 387221B | 72 | | Yes | No | | 6 | | No | No | 26.02.11 | 1000 | 12.01.12 | | | | Not done | 164 |
| 5.11.12 | Hari Krishnan P | 088758D | 70 | Uro1 | No | Yes | | 48 | | yes | no | 8.12 | 1000 | 6.11.12 and 15.1.13 | | | | Failed 1 | 167 |
| 6.8.13 | Gopal S | 619314F | 65 | Uro1 | No | No | Nil | 6 | 16 | No | No | 6.13 | 1000 | | | | | Failed 2 | 158 |
| 29.04.12 | Ganesan C | 818609B | 82 | | No | No | Pulmonary TB, Atrial fibrillation, IHD | | | | | 25.02.12 | 1000 | | | | | | 161 |
| 17.09.12 | Ganesh | 049206D | 67 | Uro1 | Yes | Yes | | 60 | | | | Jul-12 | 1000 | 17.09.12 | | | | | 172 |
| 21.11.12 | Gauranga Parva | 334153F | 65 | | No | Yes | | | | | | 6.11.12 | 1000 | 22.11.12 | | | | | 160 |
| 22.10.12 | Khader Basha H | 240676F | 67 | Uro1 | No | Yes | Hypothyroid | | | | | | 1000 | 23.10.12 | | | | | 160 |
| 05.06.12 | Chinnadurai M | 190284F | 74 | | No | No | CRF due to | 12 | | | | Apr-11 | 1000 | | | | | | 167 |
| 26.09.12 | Narasimha Reddy | 798904C | 70 | Uro1 | Yes | No | Smoker | 60 | | Yes | Yes | 12-Apr | 1000 | 28.09.12 | | | | failed 1 | 161 |
| 30.08.12 | Karunakaran V | 754285D | 84 | Uro1 | No | No | | 36 | | | | 20.08.12 | 1000 | 31.08.12 | | | | | 168 |
| 29.04.12 | Chinna Kulandai | 148311F | 64 | | No | Yes | | 36 | | | | 12-Mar | 1000 | 30.05.12 | 6 | 160 | 489 | | 160 |
| 03.08.11 | Devarajulu T | 776309C | 70 | | 6 years | 6 years | | 12 | | | | 04.07.11 | 1000 | 04.08.11 | | | | 1 | 168 |
| 08.10.12 | Vaddu | 236137F | 60 | | No | No | | 2 | | | | May-12 | 1000 | 10.10.12 | | | | Not done | 161 |
| 24.09.12 | Rajamani K | 240747F | 67 | Uro1 | No | No | Smoker | 12 | | | | Jul-12 | 1000 | 25.09.12 | | | | | 160 |

| weight(Kg) | BMI | BP(Hgmm) | DRE | USG | prosta | TRUS Wd(mr | TRUS Ht(mm) | TRUS L(mm) | Pros vol(cc) | IPP | | Gland resectec | creatinine | PSA | | urine C/S | operation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72 | 25.8 | 110/80 | 20 | | 22 | 28.4 | 19.1 | 30.7 | 8.71 | na | | 5 | 1.28 | | 0.428 | Mixture of organism | TURP |
| 43 | 17.9 | 150/80 | 15 | | | 35.2 | 18.9 | 36.1 | 12.5 | 0 | | 5 | 2.6 | | | E coli, Pseudomonas aeruginosa, I | TURP |
| 60 | 22.9 | 130/90 | 15 | NA | | 35.9 | 23.2 | 29.8 | 13 | 0 | NA | | 1.09 | | | E.coli | TURP |
| 62 | 24.8 | 130/90 | 20 | | | 33.2 | 19.8 | 38 | 13 | 3.71 | | 0 | 0.78 | NA | | 35000 GNB | TUIP |
| 65 | 23.9 | 120/80 | 20 | | | 30.5 | 21.4 | 39.6 | 13.5 | 0 | | 3 | 1.83 | NA | | >100000 E coli ESBL+ | TURP |
| 61 | 20.9 | 150/80 | 25 | | | 19.7 | 38.5 | 36.5 | 14.5 | 0 | NA | | 3.01 | | | E coli, enterobacter1, enterobacte | TUIP |
| 46 | 17.5 | 130/90 | 25 | NA | | 38.1 | 22.8 | 33.5 | 15.2 | 0 | | 8 | 1.13 | | | No growth | TURP |
| 65 | 23.9 | 140/70 | 15 | | | 37.3 | 28.3 | 27.9 | 15.4 | 0 | | 0 | 2.74 | NA | | >100000 E coli ESBL+ & Enterococ | TUIP |
| 43 | 17.7 | 140/90 | 25 | | 10.1 | 37.3 | 23.2 | 34.9 | 15.8 | 0 | | 3.28 | 1.53 | NA | | >100000 E coli ESBL | TURP |
| 50 | 19.1 | 140/90 | 20 | | | 39.6 | 21 | 37.5 | 16.3 | 0 | | 6 | 0.99 | NA | | No growth | TURP |
| 78 | 27.6 | 130/80 | 15 | NA | | 36.9 | 23.3 | 39.1 | 17.6 | 0 | | 6 | 1.09 | | | No growth | TURP |
| 75 | 26 | 190/90 | 25 | NA | | 37.6 | 22.4 | 42.1 | 18.5 | 0 | | 4 | 1.07 | NA | | Contaminants | TURP |
| 61 | 24.4 | 140/90 | 20 | NA | | 44.1 | 22.9 | 35.5 | 18.7 | 0 | | 3 | 1 | | | Mixture of organism | TURP |
| 48 | 18.3 | 110/80 | 25 | NA | | 42.4 | 24.1 | 37.9 | 20.3 | 6.98 | | 6 | 1.27 | | 5.15 | >100000 Pseudomonas and E coli | TURP |
| 48 | 18.5 | 138/80 | 20 | | | 36.2 | 24 | 45.3 | 20.6 | 7.1 | | 6 | 1.05 | | | Enterococcus and Aeromonas | TURP |
| 71 | 26.1 | 120/70 | 20 | NA | | 26.3 | 42.8 | 35.8 | 21 | 0 | | 2 | 1.2 | | | Contaminants | TURP |
| 67 | 25.5 | 136/90 | 20 | NA | | 42.2 | 22.6 | 42.5 | 21.2 | 5 | | 10 | 1.88 | | | Contaminants | TURP |
| 37 | 14.3 | 110/60 | 20 | | | 44.4 | 24.5 | 37.6 | 21.3 | 0 | | 3.7 | 2.93 | NA | | >100000 E coli ESBL | TURP |
| 70 | 25.1 | 110/70 | 20 | | | 45.5 | 30.7 | 30.1 | 22 | 0 | | 4 | 14 | NA | | Colonization 4 organism | TURP |
| 54 | 19.8 | 130/90 | 25 | | | 41.5 | 24 | 42.6 | 22.2 | 10.3 | | 10 | 1.25 | NA | | No growth | TURP |
| 47 | 19.6 | 130/80 | 20 | | | 41.3 | 20.3 | 51 | 22.3 | 9 | | 15 | 5.3 | | | Enterococcus and E coli | TURP |
| 54 | 24 | 130/90 | 50 | | | 45.1 | 25.3 | 38.2 | 22.9 | 6.84 | | 13.5 | 1.59 | NA | | >100000 Proteus mirabilis | TURP |
| 82 | 30.9 | 140/70 | 20 | NA | | 41 | 26.3 | 41.3 | 23.3 | 0 | | 8 | 1.2 | | | Morganella morganii 35000cfu/m | TURP |
| 60 | 22.9 | 140/90 | 20 | | 29 | 41.2 | 22.7 | 47.9 | 23.4 | 6.1 | | 5 | 5.7 | | | Pseudomonas and enterococcus | TURP |
| 59 | 23.3 | 140/90 | 25 | | | 47 | 23 | 42.4 | 24 | 3.2 | NA | | 1.8 | | | Contaminants | TURP |
| 38 | 14.1 | 130/80 | 20 | | 93 | 36.5 | 28.7 | 46.1 | 25.2 | 13 | | 16 | 1 | | | Pseudomonas aeruginosa, Entero | TURP |
| 60 | 22 | 140/80 | 20 | | 39.79 | 42.5 | 27.9 | 41.6 | 25.9 | na | | 9 | 1.18 | | | Klebsiella >100000 | TURP |
| 55 | 20.2 | 120/90 | 25 | | | 42.5 | 32.4 | 36.2 | 26.1 | 0 | | 6.5 | 1.04 | | 10.2 | >100000 Klebsiella | TURP |
| 44 | 16.4 | 140/90 | 20 | NA | | 44.8 | 28 | 40.8 | 26.8 | na | | 2 | 0.84 | | | Pseudomonas >100000cfu panres | TURP |
| 54 | 21.6 | 120/70 | 25 | | | 47.6 | 26 | 41.9 | 27.1 | 0 | | 6 | 1.2 | | | Contaminants | TURP |
| 99 | 35.1 | 140/80 | 20 | NA | | 41.3 | 28.4 | 44.8 | 27.5 | 0 | | 8 | 1.3 | | | Candida Tropicalis | TURP |
| 54 | 22.5 | 130/70 | 25 | | 55 | 40.5 | 30.4 | 43.4 | 28 | 6 | | 26 | 0.88 | | 13.4 | E coli >100000 ESBL | TURP |
| 70 | 27.7 | 120/80 | 35 | | 66 | 43.3 | 30.7 | 42.5 | 29.5 | 0 | | 5 | 1.2 | | | Psuedomonas amd NFGNB | TURP |
| 59 | 20.2 | 124/72 | 20 | Bladder cal | | 45.5 | 30.1 | 41.8 | 29.9 | 0 | NA | | 1.77 | NA | | 45000 Enterococcus | TURP |
| 60 | 23.7 | 140/80 | 30 | | 40 | 43 | 27.2 | 49.3 | 30.2 | 9.21 | | 10 | 1.73 | NA | | >100000 Enterococcus and Klebsi | TURP |
| 68 | 22.5 | 128/80 | 20 | | 24.3 | 44 | 24.5 | 57.2 | 32.3 | 4.1 | | 5 | 3.23 | | | Mixture- Enterococcus, Klebsiella, | TURP |
| 45 | 17.8 | 120/76 | 15 | NA | | 44.9 | 30.1 | 47.1 | 33.3 | 11 | | 14 | 1.1 | | 4.93 | Contaminants | TURP |
| 46 | 16.3 | 110/70 | 40 | | 80 | 47 | 32.6 | 44.2 | 35.4 | 2.1 | | 16 | 3.4 | | | Enterococcus, E Coli (ESBL) | TURP |
| 54 | 22.5 | 130/80 | 20 | NA | | 48.5 | 31 | 45.4 | 35.8 | Intravesica | | 20 | 1.24 | | | Enterobacter, Enterococcus, NFGI | TURP |
| 58 | 20.3 | 160/90 | 30 | NA | | 46.4 | 31.2 | 47.4 | 35.8 | 3.94 | | 10 | 1.37 | | | Contaminants | TURP |
| 42 | 15.4 | 110/80 | 30 | | | 47.9 | 30 | 48.1 | 36.1 | 11.1 | | 10 | 1.27 | | 22.1 | >100000 Enterococcus and Enterc | TURP |
| 60 | 24.7 | 140/90 | 30 | NA | | 47.2 | 30.3 | 48.9 | 36.5 | 7 | | 18 | 1.1 | | | Serretia, E coli | TURP |
| 60 | 22 | 110/90 | 30 | NA | | 46.2 | 29.4 | 52.1 | 37 | 10.9 | | 20 | 1.08 | | | Pseudomonas >100000cfu | TURP |
| 67 | 24.6 | 140/90 | 90 | | | 42.9 | 31 | 53.6 | 37.3 | 13.3 | | 24 | 0.89 | | 4 | No growth | TURP |
| 55 | 20.2 | 160/90 | 20 | | | 50.8 | 32 | 44.3 | 37.7 | 5 | | 16 | 0.97 | | | Contaminants | TURP |
| 60 | 24 | 150/90 | 25 | | | 47.6 | 32.3 | 47.4 | 38.3 | 7.06 | | 26 | 1.32 | NA | | >100000 E coli ESBL+ | TURP |
| 68 | 23 | 130/80 | 40 | | 48 | 42.3 | 32.6 | 54.1 | 38.9 | 11 | | 15 | 1.29 | | | Contaminants | TURP |
| 55 | 22.9 | 160/90 | 30 | NA | | 47.6 | 31.8 | 49.3 | 39 | 5.1 | | 12 | 1.1 | | | No growth | TURP |
| 45 | 20 | 130/80 | 30 | | | 50.5 | 29.3 | 51 | 39.6 | 3.1 | | 25 | 1.8 | | | Enterobacter, Klebsiella | TURP |
| 63 | 21.8 | 110/80 | 25 | | | 39.8 | 33.5 | 57.4 | 40 | 18.3 | | 22 | 1.09 | | 10.9 | >100000 Enterococcus and E coli | TURP |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | 22 | 126/86 | 40 | NA | | 43.8 | 36.9 | 47.6 | 40.2 | 9 | 13 | 0.94 | | Contaminants | TURP |
| 62 | 23.1 | 140/80 | 30 | NA | | 50.4 | 31 | 49.5 | 40.5 | 2.2 | 22 | 1.12 | | E coli and NFGNB >100000 | TURP |
| 50 | 19.5 | 120/70 | 40 | | | 44.1 | 33.5 | 52.8 | 40.8 | 16 | 26 | 1.16 | 7.02 | Contaminants | TURP |
| 56 | 21.9 | 130/80 | 30 | | | 43.5 | 32 | 56.2 | 40.8 | 10 | 29 | 1.3 | | klebsiela | TURP |
| 68 | 24.4 | 140/90 | 30 | | 47 | 51 | 26.2 | 52.9 | 41.1 | 4.8 | 25 | 0.95 | 1.07 | Contaminants | TURP |
| 92 | 33.8 | 150/30 | 50 | | 80 | 43.9 | 33.2 | 55.7 | 42.5 | 10 | 23 | 0.94 | | Contaminants | TURP |
| 54 | 21.6 | 150/90 | 30 | | 80 | 54.2 | 36 | 42.2 | 43 | 5.32 | 17 | 1.4 | NA | >100000 Ecoli 1&2 ESBL | TURP |
| 45 | 17.1 | 120/80 | 30 | | | 37 | 51.3 | 43.4 | 43.1 | 5 | 24 | 0.94 | NA | 600 Enterococcus | TURP |
| 66 | 25.1 | 140/90 | 30 | | 63 | 42.8 | 32.9 | 58.6 | 43.2 | 18.1 | 30 | 1 | | Contaminants | TURP |
| 68 | 23.5 | 130/90 | 30 | | 45 | 49.1 | 36.4 | 46.3 | 43.3 | 8.15 | 27 | 1.02 | | Klebsiella >100000 sensitive only t | TURP |
| 47 | 18.8 | 110/60 | 40 | | | 47.9 | 34.2 | 51.2 | 43.9 | 12.7 | 20 | 1.27 | 5.45 | >100000 E coli , NFGNB | TURP |
| 46 | 18.2 | 130/80 | 40 | | 58 | 54.7 | 31.5 | 49.8 | 44.9 | 1 | 30 | 0.9 | | NFGNB1, NFGNB2 | TURP |
| 63 | 23.1 | 130/80 | 40 | NA | | 47.3 | 32.8 | 55.6 | 45.1 | 17.1 | 17 | 0.81 | NA | Contaminants | TURP |
| 39 | 15.8 | 120/80 | 40 | | 107 | 48.4 | 37.6 | 47.6 | 45.3 | 10 | 17 | 1.2 | | Pseudomonas | TURP |
| 55 | 20.7 | 120/80 | 25 | NA | | 49.9 | 38 | 46.4 | 45.9 | | 30 | 0.6 | | E coli, proteus vulgaris | TURP |
| 45 | 17.4 | 130/80 | 30 | | 36 | 49.4 | 32.9 | 54.5 | 46.3 | 6 | 20 | 1.4 | | E.coli and Kleb | TURP |
| 73 | 22.3 | 100/70 | 30 | | 42 | 52.4 | 34.2 | 49.4 | 46.4 | 0 | 21 | 1.39 | | No growth | TURP |
| 69 | 24.7 | 150/90 | 50 | NA | | 52.1 | 34 | 50.7 | 46.9 | 4.1 | 20 | 3.1 | | Pseudomonas aeruginosa 1700 | TURP |
| 64 | 26 | 130/80 | 35 | | | 53.7 | 36.4 | 45.8 | 46.9 | 2 | 12 | 1.1 | | Contaminants | TURP |
| 58 | 21.3 | 130/80 | 40 | | 89 | 45.5 | 33.3 | 59.4 | 47 | 10.1 | 15 | 1.04 | | enterobacter >100000, sen to coli | TURP |
| 60 | 23.4 | 170/80 | 30 | | | 55.6 | 33.4 | 48.5 | 47.2 | 0 | 8 | 1.59 | | Klebseilla >100000 and Enterococ | TURP |
| 54 | 20.1 | 130/90 | 40 | NA | | 49.8 | 33.6 | 54 | 47.3 | 4.9 | 28 | 1.3 | | Pseudomonas aeruginosa 9000cfu | TURP |
| 69 | 24.2 | 130/80 | 25 | | | 50 | 38.6 | 47.4 | 47.8 | 2.93 | 15 | 1.13 | NA | | TURP |
| 64 | 20.7 | 130/70 | 25 | NA | | 46.5 | 37.9 | 53.5 | 49.4 | 12 | 20 | 1.54 | | Pseudomonas aeroginosa 4500 | TURP |
| 36 | 14.4 | 110/70 | 45 | | 34 | 46.8 | 34.7 | 59.9 | 50.9 | 6.46 | 19 | 1.01 | 6.05 | >100000 Enterobacter | TURP |
| 60 | 21.3 | 110/70 | 45 | | 72 | 55.9 | 35.4 | 49.3 | 51 | 3.9 | 24 | 1.4 | | E coli >100000 amika, ertapenem, | TURP |
| 55 | 22.6 | 130/90 | 35 | | | 57.6 | 33.9 | 50 | 51 | 10.5 | 18 | 1.2 | | >100000 Morganella morganii, En | TURP |
| 63 | 21.8 | 130/80 | 25 | NA | | 54.1 | 40.2 | 46 | 52.3 | 5.1 | 22 | 0.9 | | No growth | TURP |
| 56 | 23.3 | 100/60 | 35 | Enlarged | | 48.7 | 37.6 | 55.1 | 52.7 | 13.5 | 20 | 1.67 | NA | >100000 Enterococcus and E coli | TURP |
| 54 | 20.1 | 140/80 | 25 | NA | | 57.1 | 39.4 | 45 | 52.9 | 2.1 | 6 | 1.3 | | E.coli and pseudomonas | TURP |
| 75 | 27.5 | 160/90 | 25 | | 88 | 46.7 | 36.6 | 59.5 | 53.2 | na | 36 | 1.17 | 2.73 | >100000 Enterococcus. | TURP |
| 58 | 21.3 | 120/70 | 40 | | | 46.6 | 33.2 | 66.3 | 53.6 | 20.4 | 35 | 1.1 | NA | Contaminants | TURP |
| 48 | 18.8 | 140/90 | 40 | | | 49 | 35.5 | 59.4 | 54 | 12.6 | 20 | 1.02 | NA | >100000 Klebsiella | TURP |
| 85 | 28.7 | 120/70 | 30 | NA | | 53.7 | 41.1 | 47.4 | 54.7 | 15 | 40 | 1.2 | | >100000 Enterococcus, Klebsiella, | TURP |
| 67 | 22.9 | 136/90 | 40 | NA | | 50 | 33.2 | 64.7 | 56.1 | 20.2 | 39 | 1.51 | | Pseudomonas aeruginosa | TURP |
| 52 | 23.1 | 150/90 | 40 | | 50 | 49 | 39.8 | 56.3 | 57.5 | 16.7 | 26 | 1.48 | NA | 9400 Enterococcus and Morganel | TURP |
| 60 | 21.3 | 130/90 | 30 | | | 48.4 | 37.9 | 60.1 | 57.7 | 18.6 | 31 | 1.07 | 12.1 | No growth | TURP |
| 62 | 25.2 | 142/90 | 40 | | | 52.1 | 39.6 | 55.8 | 60.2 | | 19.5 | 1.16 | | Klebsiella >100000 | TURP |
| 74 | 25.9 | 120/80 | 70 | | | 55.3 | 35.5 | 58.8 | 60.3 | 4.07 | 12 | 1.44 | 7.88 | E coli ESBL+ >100000 amikacin, ce | TURP |
| 70 | 23.9 | 140/80 | 30 | | 63 | 50.3 | 40.2 | 57.2 | 60.4 | 4 | 26 | 1.05 | 6.72 | No growth | TURP |
| 56 | 20.8 | 140/90 | 30 | | 76 | 54.2 | 37.8 | 58.1 | 62.2 | 16 | 52 | 1.11 | | Klebsiella, E coli, Enterocoiccus | TURP |
| 61 | 19.9 | 130/80 | 40 | NA | | 57.6 | 36.3 | 57.5 | 62.8 | na | 25 | 0.94 | NA | No growth | TURP |
| 51 | 19.9 | 110/70 | 40 | NA | | 52.1 | 42.7 | 54.6 | 63.5 | 7.87 | 17 | 1.32 | NA | >100000 Enterococci and Klebsiel | TURP |
| 59 | 20.4 | 130/90 | 40 | NA | | 52.2 | 42.9 | 54.4 | 63.7 | 9.3 | 29 | 1.18 | | Citrobacter | TURP |
| 75 | 23.7 | 120/80 | 30 | | | 44.8 | 42.4 | 64.1 | 63.7 | 20.6 | 26 | 1.19 | NA | >100000 NFGNB | TURP |
| 61 | 21.1 | 130/80 | 40 | NA | | 47.6 | 43.2 | 60.2 | 64.8 | 11 | 29 | 1.1 | | Contaminants | TURP |
| 71 | 25.2 | 130/80 | 30 | | 38 | 54.5 | 42.1 | 55 | 66 | 6.01 | 20 | 1 | | Mixture of organism | TURP |
| 60 | 24.3 | 120/80 | 25 | NA | | 54.7 | 41.8 | 55.6 | 66.4 | 11.5 | 30 | 1.1 | 10.9 | No growth | TURP |
| 53 | 22.9 | 140/90 | 35 | | 60 | 58.2 | 42.1 | 52.8 | 67.6 | | 26 | 1.31 | 11.18 | Yeast- candida tropicalis | TURP |
| 50 | 20.5 | 140/90 | 40 | NA | | 53.7 | 44.5 | 54.4 | 68 | 5 | 52 | 1.4 | 20.6 | E. coli sensitiveto amikacin and NI | TURP |
| 75 | 29.3 | 200/110 | 30 | | 62 | 49.5 | 42.1 | 64.9 | 70.7 | 12 | 37.5 | 1.9 | 12.5 | Pseudomonas >100000 Resistant | TURP |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 16.2 | 120/70 | 50 | 42 | 52.4 | 41.3 | 62.7 | 70.9 | na | | 26 | 0.95 | 7.61 | 8200 Entrococcus and NFGNB | TURP |
| 90 | 38.4 | 130/60 | 35 | | 53.9 | 44.5 | 57.9 | 72.7 | 16.9 | | 47 | 1 | 4.23 | >100000 E coli 1&2 and Pseudom | TURP |
| 66 | 23.7 | 130/80 | 50 | | 59.9 | 38.1 | 61.1 | 72.9 | 14 | | 41 | 1.32 | | Klebsiella >100000 | TURP |
| 62 | 23.1 | 110/70 | 40 | 108 | 52.1 | 45.1 | 60 | 73.7 | 19 | | 32 | 1.2 | | E coli 24000CFU/ml ESBL amika | TURP |
| 50 | 17.9 | 160/90 | 35 | | 50 | 43.7 | 65.3 | 74.6 | na | 25 and 7 | | 0.85 | 7.89 | Contaminants | TURP |
| 48 | 19.2 | 100/70 | 25 | 64 | 49 | 47.4 | 64.3 | 78.2 | 18.9 | | 27 | 1.02 | 22.8 | >100000 Enterococcus NFGNB se | TURP |
| 60 | 23.1 | 130/80 | 40 | | 55.3 | 47.1 | 59.8 | 81.6 | 3 | | 16 | 1.2 | | Klebsiella >100000 | TURP |
| 67 | 22.6 | 140/90 | 45 | | 55 | 44.1 | 64.6 | 81.8 | 10.3 | | 39 | 1.28 | 1.08 | E coli, Enterococcus, Klebsiella | TURP |
| 47 | 18.4 | 140/90 | 50 | | 58 | 41.3 | 66.4 | 83.3 | 4.7 | | 50 | 1.54 | NA | No growth | TURP |
| 52 | 20.3 | 140/90 | 45 | 105 | 61 | 44.3 | 60.7 | 85.6 | 5 | | 31 | 1.31 | 4.7 | >100000 E coli Cipro Resistant | TURP |
| 63 | 22.6 | 110/80 | 20 | | 52 | 48.3 | 74.3 | 97.5 | 7 | | 52 | 2.72 | | Proteus and Enterococcus | TURP |
| 47 | 18.1 | 130/80 | 50 | 70 | 57.3 | 47.5 | 71.1 | 101 | 18 | | 75 | 1 | | E coli, Klebsiella >100000 ESBL+ | TURP |
| 68 | 24.1 | 126/84 | 40 | | 75.7 | 45.7 | 62.3 | 113 | 10.1 | | 60 | 1.2 | | E coli >100000 ESBL | TURP |
| 65 | 25.4 | 140/90 | 40 | | 65.9 | 41.3 | 80.1 | 114 | 10 | | 68 | 1.67 | | Pseudomonas and enterococcus | TURP |
| 55 | 19.5 | 110/80 | 35 | 61 | 52.6 | 54.9 | 76.4 | 115 | 10.2 | | 51 | 1.5 | | E coli60000 Amik Genta NFT | TURP |
| 51 | 19.7 | 110/70 | 30 | 145 | 70.2 | 51 | 72.5 | 136 | 22.9 | | 104 | 1.24 | 39.9 | Providencia 8500 | TURP |
| 49 | 19.1 | 130/70 | 60 | 136 | 75.1 | 55.4 | 79.1 | 172 | 19 | | 36 | 2.78 | 143 | No growth | TURP |

| biopsy | Post op creat | Post op culture | Bood grou | Glycine us | Saline | Post op Na | PVR post o | STATUS |
|---|---|---|---|---|---|---|---|---|
| Hyperplasia with chronic prostatitis | 1.01 | | O+ | 50 | Not used | | | Catheter free |
| Nodular hyperplasia | 2.7 | Pseudomonas | B+ | 40 | 6 | | 828 | CISC |
| Benign nodular hyperplasia | 1.32 | | | | | | | Catheter free |
| NA | 0.76 | No growth | NA | 10 | Not used | | | Catheter free |
| Hyperplasia | 1.62 | No growth | B- | 16 | Not used | | 39 | Catheter free |
| NA | 2.37 | E coli 300 cfu/ml | O+ | NA | NA | 136 | 41 | Catheter free |
| Hyperplasia | NA | Contaminants | B+ | 34 | Not used | | Had AUR a | Catheter free |
| NA | 2.84 | >100000 E coli E | NA | 14 | Not used | | | Catheter free |
| Hyperplasia | 1.29 | No growth | NA | 20 | Not used | | 74 | Catheter free |
| Hyperplasia with prostatitis | NA | No growth | A+ | 28 | Not used | NA | 900 | CISC |
| Hyperplasia | NA | No growth | B+ | 26 | Not used | | | Catheter free |
| Hyperplasia | 1.1 | Contaminants | B+ | 38 | Not used | 116 | 102 | Catheter free |
| Hyperplasia | NA | E Coli | AB+ | 24 | Not used | | | Catheter free |
| Hyperplasia | NA | Contaminants | NA | 12 | Not used | | | Catheter free |
| Hyperplasia and prostatitis | NA | Contaminants | A+ | 20 | Not used | NA | | Catheter free |
| Hyperplasia | 1.3 | Klebsiela | B+ | | | | 104 | Catheter free |
| Hyperplasia | NA | Contaminants | A+ | NA | Not used | | 110 | Catheter free |
| Hyperplasia | NA | | NA | 26 | Not used | 133 | | Catheter free |
| Hyperplasia | NA | 45000 Enterococ | B+ | 14 | Not used | | | Catheter free |
| Hyperplasia | NA | No growth | B+ | 40 | Not used | NA | 24 | Catheter free |
| Hyperplasia and prostatitis | 5.19 | No growth | O+ | 30 | Not used | 135 | | Indwelling catheter |
| Hyperplasia with mild chronic prostatit | 1.2 | Contaminants | NA | 36 | Not used | NA | 28 | Catheter free |
| Hyperplasia focal prostatitis | 1.25 | Enterococcus, co | B+ | 36 | Not used | 133 | | Catheter free |
| Hyperplasia and prostatitis | 1.6 | No growth | O+ | Not used | 6 | | 26 | Catheter free |
| Hyperplasia and prostatitis | 1.7 | No growth | O+ | NA | Not used | | 28 | Catheter free |
| Hyperplasia | NA | No growth | O+ | 34 | Not used | | | Catheter free |
| Hyperplasia with suburothelial chronic inflammation | | | B+ | 30 | Not used | | | Catheter free |
| Hyperplasia with chronic prostatitis | NA | 12000 Enterococ | NA | 10 | Not used | | 43 | Catheter free |
| Hyperplasia | NA | | O+ | | | | 220ml CBD | CIC |
| Hyperplasia | NA | Contaminants | A+ | 20 | Not used | | NA | Catheter free |
| Hyperplasia | NA | Enteroococcus | O neg | 40 | Not used | | | Catheter free |
| Hyperplasia | NA | E coli >100000 e | A+ | 50 | Not used | | | Catheter free |
| Benign nodular hyperplasia | NA | No growth | B+ | 20 | Not used | | | Catheter free |
| Hyperplasia | NA | NA | NA | | | | | Indwelling catheter |
| Hyperplasia | 1.62 | Contaminants | B+ | 23 | Not used | NA | NA | Catheter free |
| Hyperplasia and prostatitis | 3.03 | Enterococci and | A+ | 26 | Not used | 136 | 192 | Catheter free |
| Hyperplasia | | No growth | AB+ | 38 | Not used | | | Catheter free |
| Hyperplasia | 1.99 | Enterococcus >1 | B+ | 34 | Not used | 133 | 800 | CBD |
| Hyperplasia | NA | No growth | O+ | NA | NA | | 68.6 | Catheter free |
| Hyperplasia | | Contaminants | NA | 19 | Not used | | 70 | Catheter free |
| Hyperplasia | NA | Contaminants | B+ | 16 | Not used | | | Catheter free |
| Hyperplasia | NA | Enterococcus, E | A+ | 30 | Not used | | | Catheter free |
| Hyperplasia with focal squamous metaplasia | | | AB+ | | | 137 | | Catheter free |
| Hyperplasia | | Contaminants | | 40 | Not used | | | Catheter free |
| Hyperplasia and prostatitis | NA | NA | O+ | 26 | Not used | | Failed TWC | Catheter free |
| Hyperplasia with mild chronic prostatit | NA | Contaminants | A+ | 42 | Not used | 126 | 30 | Catheter free |
| Hyperplasia and prostatitis | 1.06 | E coli >100000, | O+ | 40 | Not used | | 87 | Catheter free |
| Hyperplasia | | Contaminants | A neg | | | | NA | Catheter free |
| Hyperplasia | 1.8 | Contaminants | A+ | | | | | CBD- Did not void |
| Hyperplasia with mild chronic prostatit | NA | 31500 E coli ESBI | NA | 28 | Not used | NA | NA | Catheter free |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hyperplasia | NA | | No growth | O+ | | 30 | Not used | | | | 21 | Catheter free | |
| Hyperplasia | | | Contaminants | B+ | | 36 | Not used | | | | 38 | Catheter free | |
| Hyperplasia with mild chronic prostatiti | NA | | Contaminants | AB+ | | 46 | Not used | | 133 | | 14 | Catheter free | |
| Hyperplasia non specific prostatitis | | 1.8 | enterococcus | A+ | | 52 | Not used | | 129 | | 98 | Catheter free | |
| Hyperplasia | NA | | No growth | NA | | 36 | Not used | | | NA | | Catheter free | |
| Benign nodular hyperplasia | NA | | Contaminants | B+ | | | | | | NA | | Catheter free | |
| Hyperplasia | | 1.35 | No growth | B+ | | 20 | Not used | | 136 | | 141 | Catheter free | |
| Hyperplasia | NA | | Contaminants | O+ | | 32 | Not used | | 133 | | | Catheter free | |
| Hyperplasia | | 1 | No growth | A+ | | 68 | Not used | | | NA | | Catheter free | |
| Hyperplasia | NA | | | O+ | | 66 | Not used | | 125 | | 18 | Catheter free | |
| Hyperplasia with moderate granulomat | NA | | | O+ | | 34 | Not used | | | | 121 | Catheter free | |
| Benign nodular hyperplasia | NA | | Contaminants | A+ | | | | | | | 34 | Catheter free | |
| Hyperplasia with prostatitis | | 0.85 | No growth | AB+ | | 20 | Not used | | | | 68 | Catheter free | |
| Hyperplasia and prostatitis | | 1 | Contaminants | A+ | | 44 | Not used | | | | | Catheter free | |
| Hyperplasia | | | Contaminants | B+ | | | | | | | | Catheter free | |
| Hyperplasia | | 1.4 | Contaminants | O+ | | 40 | 10 | | | | 51 | Catheter free | |
| Hyperplasia | | 1.22 | Enterococcus | O+ | | 20 | Not used | | | | 73 | Catheter free | |
| Hyperplasia | | 2.8 | Contaminants | B neg | Not used | | 52 | | | | 36 | Catheter free | |
| Hyperplasia | | 1 | Pseudomonas 15 | A+ | | 38 | Not used | | | | 37 | Catheter free | |
| Hyperplasia and prostatitis | NA | | Contaminants | NA | | 30 | Not used | | | | | Catheter free | |
| | | | | B+ | | 24 | Not used | | | | 67 | Catheter free | |
| Hyperplasia with focal prostatitis | NA | | Contaminants | A+ | | | | | | | | Catheter free | |
| | | | | A+ | | 74 | Not used | | 126 | | | Catheter free | |
| Hyperplasia | | 1.55 | Contaminants | O+ | | 32 | Not used | | 134 | | | Catheter free | |
| Hyperplasia with prostatitis | NA | | No growth | O+ | | 44 | Not used | | | | 40 | Catheter free | |
| Hyperplasia | NA | | NA | O+ | | | | | | | | Catheter free | |
| Hyperplasia with prostatitis | | 0.97 | | B+ | | 34 | Not used | | 128 | | | Catheter free | |
| Chronic prostatitis with granuloma | | | Contaminants | B+ | NA | | NA | | | | | Catheter free | |
| Hyperplasia with focal prostatitis | NA | | No growth | A+ | NA | | NA | | 139 | | 44 | Catheter free | |
| Hyperplasia and prostatitis | | 0.9 | No growth | B+ | | 24 | Not used | | | | | Catheter free | |
| Hyperplasia | NA | | No growth | A+ | | 56 | Not used | NA | | NA | | Catheter free | |
| Hyperplasia with prostatitis | NA | | Contaminants | NA | | 88 | Not used | | | NA | | Catheter free | |
| Hyperplasia | NA | | No growth | NA | | 46 | Not used | NA | | | | Catheter free | |
| Hyperplasia | NA | | Coagulase neg st | O+ | | 50 | Not used | | 130 | | | Catheter free | |
| Hyperplasis | NA | | E coli >100000 e | O+ | NA | | NA | | 138 | | | Catheter free | |
| Hyperplasia | NA | | 21000 Enterococ | O+ | | | | | | | | Catheter free | |
| Hyperplasia | NA | | No growth | A+ | | 36 | Not used | NA | | | | Catheter free | |
| Benign nodular hyperplasia | NA | | Contaminants | B+ | NA | | NA | | | | | Catheter free | |
| Hyperplasia | | | E coli 2500 ESBL | A+ | | | | | | | | Catheter free | |
| Benign nodular hyperplasia | NA | | Enterococcus | A+ | | 42 | Not used | | | | | Catheter free | |
| Hyperplasia | NA | | E coli >100000 e | B+ | | 36 | | | | Voided goc | | Catheter free | |
| Hyperplasia with granulomatous prosta | | 0.96 | Contaminants | B+ | | 44 | Not used | NA | | | 33 | Catheter free | |
| Hyperplasia | | 1.29 | No growth | A+ | | 44 | Not used | | | | | Catheter free | |
| Hyperplasia | NA | | Contaminants | | | 44 | Not used | NA | | | 69 | Catheter free | |
| Hyperplasia with prostatitis | | 1.46 | Contaminants | B+ | | 34 | Not used | | | | 77 | Catheter free | |
| Hyperplasia | | 1.28 | No growth | B+ | yes | | Not used | | | | 12 | Catheter fr | Had submeatal stenosis |
| Hyperplasia Chronic prostatitis | | | | B+ | | | | | | | 49 | Catheter free | |
| Hyperplasia | NA | | Contaminants | A+ | | 56 | Not used | | | | | Catheter free | |
| Hyperplasia with prostatitis | NA | | Contaminants | A+ | | 28 | Not used | | | | | Catheter free | |
| Hyperplasia with prostatitis | | 1.5 | No growth | B+ | | 56 | Not used | | | | | Catheter free | |
| Hyperplasia with prostatitis | | 1.87 | | A+ | | 50 | Not used | | | | | Catheter free | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hyperplasia | | 0.98 | NA | O+ | | 46 | Not used | | 124 | 80 Catheter free |
| Hyperplasia with mild chronic prostatit | NA | | No growth | A- | | 48 | Not used | NA | | 40 Catheter free |
| Hyperplasia | NA | | Contaminants | O+ | | 56 | Not used | | 141 | 87 Catheter free |
| Hyperplasia with prostatitis | | 1.3 | Enterococcus 85 | AB+ | Not used | | Yes | 125-133 | | Catheter free |
| Hyperplasia with prostatitis | | 0.92 | No growth | A+ | | 30 | Not used | | 136 | Catheter free |
| Hyperplasia with mild chronic prostatit | NA | | No growth | NA | | 40 | Not used | | 139 | Catheter free |
| Hyperplasia and prostatitis | | 0.93 | Contaminants | O+ | | 28 | 34 | | 132 | Catheter free |
| Hyperplasia | NA | | Contaminants | O+ | | 46 | Not used | NA | | Catheter free |
| Hyperplasia | | 1.56 | >100000 E coli E | B+ | | 48 | Not used | | 137 | Catheter free |
| Hyperplasia with chronic prostatitis | NA | | No growth | O+ | | 62 | Not used | NA | | 27 Catheter free |
| Hyperplasia and prostatitis | | 2.61 | Proteus Mirabilis | O+ | | 56 | Not used | | 136 | Catheter free |
| Hyperplasia with focal squamous meta | | 1.09 | | O+ | | 54 | Not used | | 121 | 77 Catheter free |
| Hyperplasia | NA | | pseudomonas, e | AB+ | | 70 | Not used | | 133 | Catheter free |
| Hyperplasia and prostatitis | | 2.25 | Enterococcus >100000 | | | 6 | 72 | | 128 | Catheter free |
| Hyperplasia | | | Enterococcus75( | NA | | 30 | 34 | | | Catheter free |
| Hyperplasia with acute on chronic pros | NA | | | O+ | | 66 | Not used | | 132 | Catheter free |
| Hyperplasia | | 2.07 | Pseudomonas a | O+ | | 64 | Not used | | 126 | 24 Catheter free |